EFFECTIVNESS OF GROUNDNUT CHIKKI IN IMPROVING THE LEVEL OF NUTRITIONAL STATUS AMONG SCHOOL CHILDREN IN SELECTED HOSTEL AT TIRUNELVELI TAMIL NADU .

A DISSERTATION SUBMITTED TO THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING.

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By

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"How numerous you have made your wondrous deeds,

O Lord, our God! And in your plans for us there is none

To equal you, should I wish to declare or tell them?

They would be too many to recount

- Psalm 40:6

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ABSTRACT

Nutrition is an organic process of nourishing or being nourished; the process by which an organism assimilates food and uses it for growth and maintenance. It is sources of material to nourish the body, the scientific study of food and drink in humans. Nutrition is the provision, to cells and organism of the material necessary (in the form of food) to support life .Many common health problems can be prevented or alleviated with good nutrition.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of groundnut chikki in improving the level of nutritional status among School children in Selected hostel at Tirunelveli.

METHODOLOGY

The research methodology is the systematic way to solve the research problem (Kothari 1990). It consists of all general and specific activities of the problem till final interpretation and conclusion. A Quantitative research approach was adopted for this study. Quasi experimental Design was used for this study. The study was conducted in Child Jesus Girls Higher secondary school, Tirunelveli. Purposive sampling technique was used for sample selection. 30 samples in control and 30 samples in experimental group. Who fulfills the inclusion criteria.

Objectives:

1. To assess the pre test and post test level of Nutritional status among school children of experimental and Control group.
2. To find out the effectiveness of groundnut chikki in improving nutritional status among experimental group of school children.
3. To find out the association between the post test weight score of experimental and control group and a selected demographic variables such as age, religion, education, occupation, income of parents, number of

children in the family, birth order, history of previous illness, history of deworming and history of diet.

4. To find out the association between the post test of hemoglobin level in experimental and control group and a selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.
5. To find out the association between the post test score check list of experimental and control group and a selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

HYPOTHESIS

H_1 - There is a significant difference between mean pretest and post test score of an experimental group of children in improving the level of nutritional status after groundnut chikki.

H_2 - There is a significant difference between a mean post test score of the experimental group and mean post test score of the control group of school children in improving the level of nutritional status.

H_3 - There is a significant Association between mean post test weight score of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

H_4 - There is a significant Association between post test of hemoglobin level in experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

H_5 - There is a significant Association between post test score check list of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

MAJOR FINDINGS OF THE STUDY

- Regarding the age majority of the children 24 (80%) were between 10-11 years in the experimental group and 28 (93%) were between 10-11 years in the control group. Regarding Religion majority of the children 20 (66%) were Hindu in the experimental group and 18 (60%) were Christian in the control group. About education of parents 11 (37%) of them were primary education in the experimental group whereas 11 (37%) were illiterate in the control group. Regarding the occupation of parents coolie had shown higher frequency 24 (80%) in the experimental group and 23 (77%) in the control group. About 23 (77%) had a monthly Income below (Rupees) 3000 in the experimental group, and in control group 25 (83%) had a monthly income below (Rupees) 3000. With regard numbers of children in the family were two had shown the highest frequency 13 (43%) in the experimental group and in control group highest frequency is 26 (87%) were one Number of children in the family. About birth order majority of the children were second child 11 (37%) in experimental and 16 (53%) control group. Regarding the History of Deworming majority of children taken only once 30 (100%) in the experimental group whereas 29 (97%) in the control group. Regarding the history of the diet pattern majority of children were vegetarian 30 (100%) in the experimental group whereas 29 (97%) in the control group.
- The majority of the samples 19 (63%) had inadequate weight in experimental pretest, but this has improved to 14 (46%) adequate and 8 (27%) inadequate weight in post test of the experimental group. The weight of control group samples similar in pretest and post test. While considering the hemoglobin, 4 (14%) had severe anemia. 19 (63%) had moderate anemia in experimental

group pretest but these samples have moved to mild anemia 28 (14%) is a post test of the experimental group. The control group pretest and post test level of hemoglobin was same. With regard to check list the experimental group pretest shows that 26 (86%) were in moderate category and 4 (14%) in poor category but after the intervention they have moved to 11 (37%) moderate and 19 (63%) good nutritional status in the post test. The control group pretest and post test were almost similar.

- Experimental group shows effectiveness of ground nut chikki in improving weight with 't' value 3.372 which is greater than the table value (2.462) at 0.05 levels and Control group does not show effectiveness of weight with 't" value is 0.029 which is lesser than the table value (2.462) at 0.05 levels. Experimental group shows effectiveness of ground nut chikki in improving HB with 't' value 2.592 which is greater than the table value (2.462) at 0.05 levels and Control group does not show effectiveness of weight with 't" value is -2.995 which is lesser than the table value (2.462) at 0.05 levels. Experimental group shows effectiveness of ground nut chikki in improving checklist score with 't' value 14.37 which is greater than the table value (2.462) at 0.05 levels and Control group does not show effectiveness of weight with 't" value is 2.34 which is lesser than the table value (2.462) at 0.05 levels.
- The result shows that there is a significant association between the post test weight score experimental and control group and their selected demographic variables. The calculated chi-square value for the History of Deworming and diet pattern of control group and occupation of parents in the experimental group was higher than the tabulated value.
- The result shows that there is the association between the post test checklist score of experimental and control group with their selected demographic variables. The calculated chi-square value for Religion of children and education of parents of the experimental group was higher than the tabulated value. The calculated chi-square value for religion of children, Education of parents, Income of parents, Number of children history of Deworming and

history of Diet pattern of control group was higher than the tabulated value at $p < 0.05$ level of significance

RECOMMENDATION:

1. A similar study can be conducted by using a large sample to generalize findings.
2. Comparative study can be conducted among private and Govt. School children.
3. A study can be conducted to identify the factors influencing nutritional deficiency among school children.
4. A qualitative study could be carried out to explore in depth in improving levels of Nutritional status by groundnut chikki.
5. A same study can be conducted in community settings.
6. Educational programs can be devised to create awareness among the mother to promote the nutritional status of school children.
7. Comparative study can be conducted among the Government and private school hostel girls.

CONCLUSION:

In this study, experimental group shows effectiveness of groundnut chikki in improving the level of nutritional status, such as weight, hemoglobin, and checklist. But in the control group, no improvement is seen in weight hemoglobin and checklist. Groundnut chikki is more effective in improving levels of nutritional status among school children in Hostel girls. As a pediatric nurse we have the responsibility of creating awareness about various nutritional deficiency disorders and measures to improve nutritional status. Also the government can launch nutritional programs to improve nutritional status of school children.

CHAPTER – 1
INTRODUCTION

Let food be thy medicine, thy medicine shall be thy food

- Hippocrates

The Lord hath created medicines out of the earth and he that is wise will not abhor them

- Ecclesiasticus 38:4

Nutrition is an organic process of nourishing or being nourished; the process by which an organism assimilates food and uses it for growth and maintenance. It is a source of material to nourish the body, the scientific study of food and drink in humans. Nutrition is the provision, to cells and organism of the material necessary (in the form of food) to support life .Many common health problems can be prevented or alleviated with good nutrition.

School children form an important vulnerable segment of the population and constitute about 20 percent of the total population of India school age is a dynamic period of growth and development as children undergo physical, mental, emotional and social changes during this stage. Malnutrition, in its various forms, is a very depression health problem of today affecting over half of the world population. Malnutrition leads not only to stunting of physical growth but also to suboptimal intellectual development.

In India, 30 percent of the school age, children have moderate to severe malnutrition. Major nutrition problems reported to be are PEM, vitamin A deficiency and iron deficiency anemia. Dietary inadequacies have been considered as a predominant etiological factor in the cause of all deficiency disease.

Growth and nutritional status of preschool and school going children are profoundly influenced by the diet consumed by them. Therefore, the school children in their existing nutritional conditions are in a great need of restoration. To overcome the health improvement in their health, status it becomes necessary to have exact information about the prevalence of deficiency disease among school children. So that appropriate preventive steps are taken.

In India:

Anemia is estimated to affect one half of school age children, the 5% of total school children showed the presence of night blindness which is one of the first symptoms appearing due to vitamin A deficiency. The greater percentage of boys (28%) than girls (25%) showed a lack of luster in their hair. Twenty four percentages of boys (28%) than girls (25%) showed a lack of luster in their hair. 24 percent of total school children showed thinners and sparseness of hair. The greater percentage of boys (26%) than girls (22%) showed thinner and sparseness of hair. The easy plucks ability of hair was observed in very few children. These signs indicated that school children were malnourished. This may due to inadequate intake of protein in their diet. It was reported that 17 percent of school children were acutely malnourished and 16.8% suffered from chronic malnutrition.

Around one million children suffer from vitamin A deficiency in India, and 10 % of school children belonging to the poor socioeconomic group’s iron India show sign of vitamin A deficiency. Recently school children especially girls were facing a lot of problems like

- Nutritional deficiencies.
- Helminths infestation (including intestinal parasites and schistosomiasis)
- Other infection (ranging from malaria to dental carries)
- Disabilities
- Reproductive problems (including premature fertility, sexual violence and exposure to sexually transmitted diseases)

Groundnuts, also known as peanuts are considered a very healthy snack. Groundnut is the member of the legume family and is native to regions like South America, Mexico and Central America. However, it is successfully grown in other parts of the world as well as in India also. The name of the plant combines the morpheme ‘pea’ and ‘nut’. In the culinary sense, the fruit of the plant is a woody legume. Since that is the case the groundnut is also known by different names like earth nuts, goober peas, pindas, jack nuts, pindasmanils nuts and monkey nuts. Throughout the world they are known for the nutrition and health benefits.

Research says that, a diet rich in groundnut products can reduce cholesterol, lower the risk of heart disease and provide protection against cancer. It has dietary fiber which is essential to the smooth functioning of the body’s waste elimination.

Dr. Alan Hirach concluded that the people who like to snack on groundnuts tend to easy going, empathetic understanding, calm and have a very cool nature.

Groundnut chikki is popular all over the country amongst all age groups but school going children and rural areas are the main target.

NEED FOR THE STUDY

School Children are the most visible victims of under nutrition. Children who are poorly nourished suffer Up to 160 days of illness each year. Poor nutrition plays a role in at least half of the 10.9 million child death, each year-five million deaths. Under nutrition magnifies the effect of every disease including measles, malaria and diarrhea. The estimated proportions of death in which under nutrition is an underlying cause are roughly similar for diarrhea (61%).

Globally

Hunger says that, malnutrition as measured by standing, affects 32.5 percent of children in developing countries. One of the three geographical 70 percent malnutrition lives in Asia, 26 percent Africa, 4 percent Latin America.

The most recent estimates released in October 2010 by FAOsay that 925 million people are undernourished in world wide.

According to Jean Ziegler (the United Nations Special Reporters on the Right to Food for 2000 to March 2008), mortality due to malnutrition accounted for 58% of the total mortality in 2006, In the world, approximately 62 million people, all causes of death combined, die each year. One in twelve people worldwide is malnourished. In 2006, more than 36 million died of hunger or diseases due to deficiencies in micronutrients.

According to the World Health Organization, malnutrition is by far the biggest contributor to child mortality, present in half of all cases. Six million children die of hunger every year. Underweight births and inter-

uterine growth restrictions cause 2.2 million child deaths a year. Poor or non-existent breastfeeding causes another 1.4 million deaths. Other deficiencies, such as lack of vitamin A or zinc, for example, account for 1 million. Malnutrition in the first two years is irreversible. Malnourished children grow up with worse health and lower educational achievements. Their own children also tend to be smaller. Malnutrition was previously seen as something that exacerbates the problems of diseases as measles, pneumonia and diarrhea. But malnutrition actually causes diseases as well, and can be fatal in its own right.

IN INDIA

The World Bank estimates that India ranks 2nd in the world of the number of children suffering from malnutrition after Bangladesh 47% of the children exhibit a degree of malnutrition. The prevalence of underweight children in India is among the highest in the world.

A girl child in India the situational analysis 1998 which points out that a large number of school children are malnourished and the problem is more among girls 45% than boys 20%.

According to Prakash V. Kotechea (2005) who stated that the prevalence of anemia was 75% in the school going girls in Veda dava Gurat. The NFHS –5 National Family Health survey conducted in (2005-06) reports that 56% of school going girls are in India.

According to Thalalvar MGB nutrition meal program (1984) was implemented in nutritious meal center in urban at least to provide meals for VI to X standard children on school working days.

According to Talim M (1998) denotes “Iron deficiency anemia can result due to a faulty diet having a lot of preserved, processed and junk food, that leads to deficiency of essential ingredients. The Indian diet contains 20-30 mg of iron. About 1-3 mg of iron absorbed from the daily diet, hence the 10-25% of iron is required to be taken daily.

According to Rigaud.D (2000) emphasis only 5-10% of iron is absorbed. This dietary intake should be 10-20 times higher than absorption. The coefficient of gastrointestinal absorption of iron from meat and fish is about is 20% versus 3-5% of iron in vegetables. Hence, provide Iron in ferrous form, there are substances, Present in meat which promotes iron absorption and substances in some vegetables their substances which limit iron absorption.

According to Dahaya, P. And Khosla, K; (2002**,** depicted ‘A well balanced diet with enhances iron absorption, like ascorbic acid and meat is recommended. All vegetables are at increased risk of iron deficiency.

According toDesai V.S. (2003) evidence’s **‘** In India diets which are predominantly vegetarian and lacking in animal proteins which in tylain and low in ascorbic acid contents, the bio availability of iron is poor, this coupled with poor iron absorption contributes to widespread of iron deficiency anemia.

According toThomson gale, (2007**)** who state that iron deficiency is still a big problem today. In fact the ‘WHO’ lists iron deficiency as one of the top ten risk factors contributing to death. The prevalence of anemia was 4-5 billion people, 66-80% of the world population. School age is an opportune time for intervention to growth needs

According toShamai et.al (2005) who stated that back of dietary iron in the world 0.01 leading nutritional deficiency and the most common cause of anemia in women 15 heavy periods. Only 1 mg of iron is absorbed for every 10-20 mg of iron ingested. Iron leads to fall in academic performance with decline in memory and concentrated levels also suspectionally to infection in school age and adolescents.

At national level 73.7% prevalence of anemia

In Tamilnadu - 97.0%

School age is a period where children will not give more importance in taking proper diet as they were interested in taking more snacks they cannot understand that taking more snacks will cause health problems too. A good snack will satisfy the children as well as meeting the nutritional status. Groundnut chikki is the best example of that and it is the best snack.

During my community posting. I have seen many children were interested in buying groundnut chikki. This motivated me to take groundnut chikki as the main source for my research to gain the children co-operation groundnutchikki is rich in protein, iron vitamins, Minerals, calcium which is very essential for the school age group in increasing the weight and Hemoglobin level. As groundnut chikki is very simple to prepare, is liked by children, low cost. I have chosen groundnut chikki for my dissertation.

STATEMENT OF THE PROBLEM

A study to assess the effectiveness of groundnut chikki on improving the level of nutritional status among School children in a selected hostel at Tirunelveli.

OBJECTIVES

1. To assess the pre test and post test level of Nutritional status among school children of experimental and Control group.
2. To find out the effectiveness of groundnut chikki in improving nutritional status among experimental group of school children.
3. To find out the association between the post test weight score of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.
4. To find out the association between the post test of hemoglobin level in experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.
5. To find out the association between the post test score check list of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

HYPOTHESES

H_1- There is a significant difference between mean pretest and post test score of an experimental group of children in improving the level of nutritional status after groundnut chikki.

H_2 - There is a significant difference between a mean post test score of the experimental group and mean post test score of the control group of school children in improving the level of nutritional status.

H_3- There is a significant Association between meanpost test weight score of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

H_4 -There is a significant Association between the post test of hemoglobin level in experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of dieting.

H_5- There is a significant Association between post test score check list of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

OPERATIONAL DEFINITION

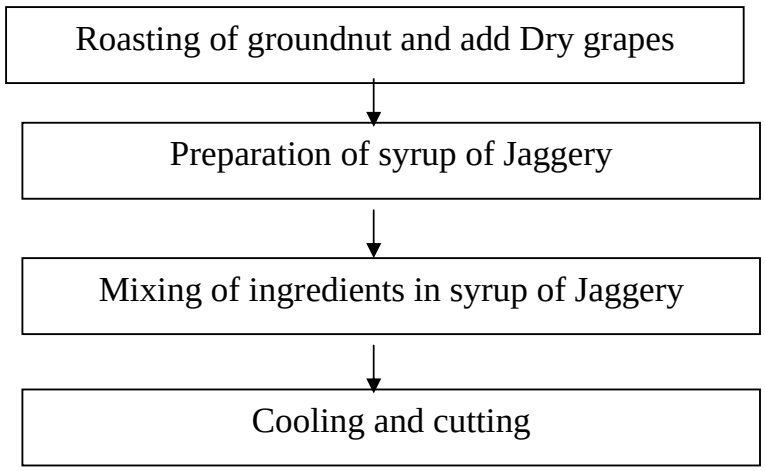
Effectiveness

In this study it refers to improve the level of nutritional status in school children staying at the hostel after giving groundnut chikki. This is measured by observational checklist, anthropometric measurement such as weight and hemoglobin level.

Groundnut chikki

In this study, It refers to 100 gms nutritional ball it contains nutrients such as calcium – 93mg, carbohydrate – 16.13gm, fat – 49.24g, fiber – 8.5gm, iron – 4.58mg, magnesium – 168mg, manganese – 1.934mg, phosphorous – 376mg, potassium – 7.5mg, protein – 25.80g, sodium – 18mg, water – 6.50gm, Zinc – 3.27 mg.

Preparation



The groundnut chikki contains ingredients :-

Groundnut

Jaggery

Dry grapes

Clarified butter (Ghee)

Quantity of groundnut chikki – 100 grams daily

Children

In this study it refers to the Girls who are studying $6^{th}$and 7^{th} standard and staying in the hostel at Child Jesus girls higher secondary school.

Nutritional status

It refers to the improvement in the level of health in relation to changes in General health, Hemoglobin and Weight as measured by observational checklist, Hemoglobinometer and Weighing machine.

ASSUMPTIONS

- Groundnut chikki is the rich source of protein, Iron, carbohydrate, fat, fiber, magnesium, manganese, phosphorus, sodium, water and zinc.
- Groundnut chikki improves the weight and hemoglobin level in girls.
- Socio demographic variables influence the nutritional status.

LIMITATIONS

- The study is limited to six weeks.
- Sample size is 60.

PROJECTED OUTCOMES

- The study helps to find out the effectiveness of groundnut chikki in improving the level of nutritional status.
- The findings of the study help the investigator to determine the effectiveness of groundnut chikki in terms of improving the nutritional status among hostel girls.
- The study will be useful for the Girls to prevent from nutritional deficiency in term of raising the health status of them.
- At the end of the study the girls able to understand foodstuffs contain more protein and iron.

CONCEPTUAL FRAME WORK

A conceptual framework is interrelated concept or abstraction that is assembled together in some rationale scheme by virtue of their relevance to a common theme (Polit and Hungler 1995).

A conceptual framework is a theoretical approach to study the problems that are significantly based with emphasis the section arrangement and classification of its concepts.

The conceptual framework for the present study is based on BERTALANTY J.Y KENNY open system model (1969) which focuses on behavior modification. This model was explained in improving the level of nutritional status on it by daily intake of groundnut chikki.

Input

Input or structure specifically the design to meet the goal and objectives. In this study the level of nutritional status is assessed through, weight checking, Hb estimation and observation checklists in experimental and control samples with below 33kgweight, and Hb level below 12gm was selected for the experimental group. Then as an (Input) prepared groundnut chikki weighing 100 gm was given to the experimental group daily and groundnut chikki was not given to a control group.

Throughput

Throughput or process refers to identifying the design interaction that takes place towards goal. In this study throughput is the process of increasing body weight, HB in the blood and disappearing of clinical features of nutritional deficiency .

Out put

Out put or outcome refers to the end result of achieving and regarding the activities of the interaction between the input and through putmeasures in terms of gain, loss and changes that take place. In this study it refers to post test conducted to assess the level of nutritional status through weight checking, Hb estimation and observational checklist to experimental and control group and expecting the result of improved weight, Hb level and checklist score of the experimental group than the control group. Higher score gained by the experimental group girls indicates the effectiveness of nutritional intervention.

CHAPTER – II
REVIEW OF LITERATURE

Review of literature is an important step in the development of a research project. It involves being systemic identification, location, Scrutiny of summery of written materials that contains materials on necessary problems.

(**Polit and Hungler 2000**)

In the present study the review of literature is organized under the following headings.

Section I: Studies related to Nutrient supplementation

Section II : Studies related to prevalence of anemia

SECTIONI: STUDIES RELATED TO NUTRIENT SUPPLEMENTATION

Nazi. P Pediatric et.al, (2010) in Salem stated the effect of weaning biscuits supplementation of the nutritional parameters and cognitive performance of the selected children. A total number of 150 school children, 61 from primary school I, 46 from primary school II and 43 from primary school III comprised the study sample. About 80 primary school children with Grade II malnutrition were selected for the experimental study. Home diet without any supplementation was followed by Group I (n=20, control group), potato flour biscuit was supplemented to Group II (n=20) wheat biscuits was given to Group III (n=20) and Ragi biscuits were given to Group IV (n=20) for the period of 3 months. Parameters like anthropometric measurement hemoglobin content clinical picture and cognitive performance were analyzed before and after supplementation. Results about Group I (control, group) showed no significant difference in height, weight and clinical picture

and cognitive performance after three months on their home diet. In Group II, III and IV significant increase in all the above parameters was noticed. More increase was found in Group II children supplemented with potato flour biscuits for a period of 3 months. About cognitive performance better results were obtained in Group II followed by Group III (Supplemented with wheat biscuits) and Group IV (supplemented with Ragi biscuits). Least was obtained by control group children who are in their home diet.

Vyas S, Collin et.al., (2010) Conducted a study to highly prevalent among women in India leaf concentrate as an alternative to Fe and folic acid supplements for treating anemia in school age girls.Randomized controlled trial over 3 months: one group received daily Fe and folic acid (IFA; 60 mg Fe, 500 micros folic acid); the other daily leaf concentrates (LC; 5 mg Fe, 13 micros folic acid). Hb concentration, mean cell volume, serum Fe, serum ferritin and total Fe-binding capacity were measured pre- and post-intervention. After adjustment for baseline values, LC was as effective as IFA in improving serum Fe parameters and treating anemia. Leaf concentrate is an effective, and more palatable, alternative to Fe and folic acid supplements for treating anemia in school age girls.

Osei AK, et.al., 2010 who have conducted community level micronutrient fortification of school lunch meals improved vitamin A, folate, and iron status of school children in Himalayan villages of India. In this placebo – controlled, cluster – randomized study 499 school children (10-12years) received either. Multiple micronutrients Blood samples drawn before and after the intervention were analyzed for hemoglobin, ferritin, retinol, zinc folate, and vitamin B-12, total body iron increased in both groups; however, the change was greater in the treatment than in the control group.

Sarma KV et.al., 2008 National Institute of Nutrition (Indian council of medical Research) they evaluated the effect of a micronutrient – fortified beverage on growth and morbidity in apparently healthy school children. This was a double blind, placebo-controlled, matched – pair, cluster, randomized study in semi-urban middle – income residential school children aged 10 to 12 years. Anthropometrics (height and weight), clinical symptoms of deficiency and morbidity data were collected at baseline in the supplemental group (n=446 in 10 grades) and the placebo group (n=423 in 10 grades) and after 14 months of supplementation (n=355 in the supplement group and n=340 in the placebo group of nine pairs). There was a significant increase in mean increments of height and weight 2 scores of -0.04 and 0.02.

Riosonar MG et.al., 2008 Philippines who have conducted weekly iron supplementation delivery system on the prevalence of anemia among anemic school children aged 6-12 years with hemoglobin < 12gldl. Compliance to iron supplementation was directly observed and recorded using a monitoring form and a supplementation calendar. Hemoglobin concentration, weight and height were determined at baseline and at post-intervention. At the post intervention, the participants mean hemoglobin concentration increased anemia prevalence was reduced by 53% and 84.3% of the participants had 100% compliance to supplementation.

Hettiarachchi et al.,2008Srilanka who have made a study the efficacy of micronutrient supplementation in reducing the prevalence of anemia and deficiencies of zinc and iron among school children of age 10-12 years (n=821) were randomized into four groups and supplemented with iron, zinc, iron + zinc or placebo capsules 5 days per week for 24

weeks. Anthropometry and hemoglobin (Hb), Serum zinc (Zn) and serum ferritin (SF) concentrations were determined before and after the intervention. The prevalence of anemia was found to be 70.3% in the iron group at baseline: this was reduced to 14.5% after the supplementation. In the combine supplemented group anemia, prevalence was reduced from 64.8 to 19.3%.

Maalouf J, et.al.,2008 who have conducted short – and long-term safety of weekly high dose vitamin D3 supplementation in school children to assess short-term safety, 25 subjects randomly received a placebo or vitamin D (3) at doses of 14,000 I/U per weeks for 8 weeks. To assess long-term safety, 340 subjects randomly received a placebo, vitamin D (3) as 1,400 IU per week. Bio chemical variables were monitored at 0,2,4,6 and 8 week of therapy in the short term study and for 0, 6, and 12 months in the long-term study. In the both the short and long-term studies, mean serum calcium and 1,25hydroxy – vitamin levels did not change in any group. In the short term study, mean 25 hydroxyl vitamin concentration increased from 44 (+/-11) to 54 (+/-19) mg per ml in the treated groups (P=0. 033). In the long term study, mean 25 – hydroxyl – vitamin D level increased from 15+/-8 to 19+/-7 mg per ml (P<0.0001) No subject developed Vitamin D intoxication.

Public Health Nutrition 2008 conducted a nationwide study was performed in Cuba to assess vitamin A status and the intake of vitamin A Providing foods in children aged 6 – II years. No child had plasma retinol concentration below 0.35 micromoles 1-1, adequate vitamin A status was present in 75% consumption of foods rich in vitamin and provitamin A, especially vegetables, was frequent but limited to a small variety of foods.

Anand , Kent and Kapoor (2008) conducted a study on nutritional status of school children in rural north India, among students in class sixth to twelfth standard. All children attending school at the time of the survey were included. Hemoglobin was estimated by sahli' haemoglobinometer.The anemia was present in 51% of the girls (n=68) compared to 38.5% n=39 in older girls. The mean Hb was higher in boys compared to girls in both the age group.

SECTION II : STUDIES RELATED TO PREVALENCE OF ANEMIA

Rezaei m Rahimi z et al (2008) conducted a cross sectional study to determine the prevalence of iron deficiency anemia among school girl 10-12 years from 20 different high schools.The prevalence of anemia (Hb<12mg/dl) among school girl was 21.4%. Iron deficiency using the ferritin level <12 micro GM /1 was found in 23.7% of studied girls .There were 47 girls (12.2%) with iron deficiency anemia (Hb<12 g/dl and ferritin, <20 significant differences between the presence of anemia and the level of v urban slum setting. A total of 100 apparentlyhealthy girls between the ages of 10 and 12 years were recruited.Their socioeconomic, dietary and anthropometric informationwas collected, and blood hemoglobin (Hb) was estimated. Theprevalence of anemia (Hb<12 g%) was 29%. Most had mild anemia;severe anemia was not seen. Two-thirds of those with anemiahad low serum ferritin (<12 μg/L). Significant associationswere observed between anemia and low socioeconomic status,religion and reporting infrequent/non-consumption of meat (hemeiron). Only meat consumption was related to hemoglobin by multipleregression analysis

Cad saude pulblication 2007 conducted this study aimed to evaluate the efficacy of weekly iron supplementation with or without vitamin A i8n the treatment of iron deficiency anemia, using an experimental, randomized, non-placebo- controlled design in 267 school children 6 to 14 years of age were randomized to two treatment groups. One group (144) received 200mg iron sulfate alone, with 40mg of elemental iron, while the other (123) received the same iron supplementation dose plus 10,000 IU of vitamin A (both groups for 30 weeks) final anemia prevalence was reduced from 48.4% to 17.7% ($p<0.001$) in the group receiving iron supplementation alone and 58.1% to 14.3% ($p<0.001$) in the group receiving iron + vitamin A. There was a significant correlation for iron deficiency anemia with weekly iron-alone supplementation, but with no additional advantage of vitamin A.

R. Gwaarika, et al (2005) who reported that the overall prevalence of anemia among the school age girls of weaker economic groups was 96.5% among girls of middle in the higher middle income group was 65.18%. The prevalence of severe anemia among the weaker income group was 1:5 and among girls and middle or higher income group was 2.63% .

Jeddah et al., (2005) conducted studies to find out the prevalence of anemia as well as to recognize the students (9-14) awareness of their anemic nutritional status.Anemia was more prevalent among students of at least 12 years as compared to the younger age group.Also,anemia wasmore marked among governmental school attendees and those born to working mothers.Only 34.1% of anemic school students were aware of their anemic status than boys.

TropeMED. Int Health 2004, who madea study on weekly iron supplements given by teachers sustain the hemoglobin concentration of school children in the Philippines. 49 rural primary schools took part in the study and were randomly assigned to two groups. 25 schools received a weekly tablet providing 108 mg iron while children in 24 schools acted as control. All children were dewormed before the start of the iron supplementation. The mean hemoglobin concentration of children in the intervention group did not change significantly, in the untreated group it feelsto be 3.8 grams per dl and the prevalence of anemia from 14.3% to 25.6%. The difference between study groups was significantly larger among the younger children (7-8 years) and was observed in both anemic and non-anemic children.

Grillen beger M et.al., 2003 who have conducted the study about food supplements have a positive impact on weight gain and the addition of animal source foods increases lean body mass of Kenyan school children. Children in each of the supplementing groups gained approximately 0.4kg (10%) more weight than children in the control group children who received the meat supplement gained 30-80%., And children who received the milk supplement gained 40% children who did not receive a supplement no statically significant overall effects of supplementation were found on height. The result indicates that food supplements had a positive impact on weight gain in the study children and that the addition of meat increased their lean body mass.

Departments of Nutrition and Epidemiology 2003 conducted the study about Nut consumption and body weight frequent nut consumption is associated with lower rates of coronary artery disease (CAD), also, nut rich diets improve the serum lipid profile of participants in dietary

intervention trials. However, nuts are fatty foods, and in theory their regular consumption may lead to body weight gain. Epidemiological studies indicate an inverse association between frequency of nut consumption and body mass index selected diets including nuts frequently have a higher body mass index or a tendency to gain weight.

Debs(2002) conducted an evaluation study of iron rich diet among school girls in urban areas, Arunachal Pradesh .Pre- experimental one group pre test and post- test design was used .Selected 50 samples by randomized sampling method, evaluated the study by questionnaire method and detected, 70% of anemic schoolgirls and 50% of non anemic school age girls were found in pre –test. In post –test 90% of anemia were reduced by supplementation of iron, and iron rich diet in school age girls and 60 % of anemic were reduced in non anemic school girls.

Krz KM et.al.,(2001). Who have conducted the study about Nutritional status of boys and girls have recently Anemia was the most important nutritional problem. Anemia prevalence was higher in 4 studies (55% in India, 42% in Nepal, 32% in Cameroon, and 48% in Guatemala) and significant in 2 overs (17% in Ecuador and 16% in Jamaica). These results suggest that the iron status of school needs to be improved.

Kotecha PV, Nirupam S, et.al., (2000). Stated thatthe school anemia control program was initiated as a pilot program covering over 69000 girls in over 426 schools program strategy was to provide once a weekly fixed day (Wednesday) supervised iron folic acid (IFA) supplements to all school age girls in grade 8-1After approximately 17 months of intervention, impact study was conducted in the same 30 schools in November 2001 to obtain levels of anemia and some of the paired data from the students who were part of the baseline study. Impact

evaluation showed reduction in anemia prevalence by 21.5% percent that is, from 74.7% per cent to 53.2 per cent (p<x0. 05). Further improvement in HB was recorded among 80 percent girls.

Chakma.Tet al., (2000) Conducted study among school going children (6-14 years) of Baiga, Abuiahmadia and Bharia tribes of Madhya Prakesh to assess the prevalence of anemia and intestinal parasite infestation among them. A total of 776 school going children is included in the study of which blood sample from all and stool samples of 409 were collected. The result revealed that 30.3% of the children had severe anemia (Hb<7g/dl) and 505 had an intestinal parasite, Most common parasiteswhereHook worm (16.3%) and A Lambricoids (18.5%).

CHAPTER III
RESEARCH METHODOLOGY

Introduction

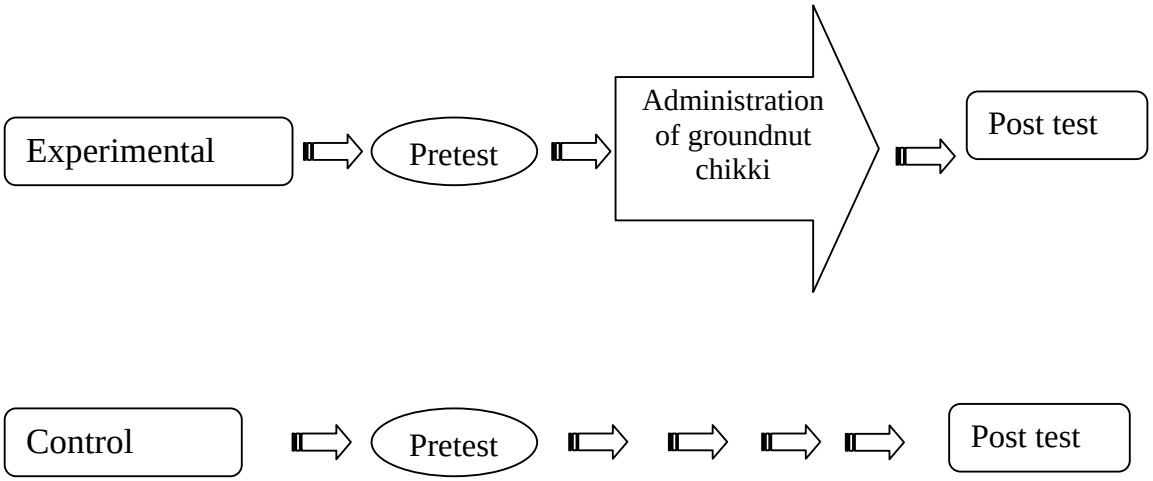
The research methodology is the systematic way to solve the research problem (Kothari 1990). It consists of all general and specific activities of the problem till final interpretation and conclusion.

Research approach

A Quantitative research approach was adopted for this study.

Research design:

Quasi experimental Design was used for this study. 30 samples in control and 30 samples in experimental group.



RESEARCH SETTING

The study was conducted in Child Jesus Girls Higher secondary school, Tirunelveli which is 195 km away from our college. The total number of children in this school is 2500. The correspondent is Sis. Sabalamary Principal Sis. Sasikala the hostel In-charge is Sis.

Christopher and hostel warden is Miss. Levina. The total number of teachers working in this school is 48. Each class consists of eight sections and a section consists of 30 students. Sixth and seventh standard are divided into 8 sections as A, A_1, B, C, D, E, F, and G. 42 girls from sixth standard and 45 girls from the seventh standard were staying in a hostel.

POPULATION

The target population of the study 6^{th}, 7^{th} standard girls in the age group of 10-12years.

SAMPLING

Sample

The sample consists of girls in the age group of 10-12 years who were staying in a hostel in Child Jesus Girls Higher Secondary school, Tirunelveli.

Sampling size

The samples consist of 60 girls among them 30 girls will be in the experimental group and 30 in the control group who fulfill the inclusion criteria was selected.

Sampling technique.

Purposive sampling technique was used for this study.

Criteria for Sample selection.

The sample was selected based on the following inclusive and exclusive criteria.

Inclusion criteria

- Girls between age group 10-12 years.
- Girls those who are willing to participate in this study.
- The girls whose Hemoglobin below 12 gm.
- Having a good physical activity level.

Exclusion criteria

- Girls those who are affected by protein energy malnutrition, sick girls and diabetic mellitus.
- Girls in the age group above 12 years.
- Boys are excluded.
- Girls those who are not willing to participate in this study.
- Who are not attained menarche .

DESCRIPTION OF TOOL

TOOL I

Section A: Demographic variables

Deals with demographic data on girls such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

Section B

1. Weighing machine – Checking weight
2. Hemoglobin is measured by sahils hemoglobin meter scale.

It is about sahils hemoglobin meter scale. The hemoglobin level was checked by using sahils hemoglobin meter scale. The materials of the sahils consists of sahils hemoglobin meter sahils pipette(Graduate to 20cumm) small glass rod, dropping pipette, hydrochloric acid, sahils pipette is used to aspirate blood up to 2 cumm, small glass rod is used to put the sterile water drop by drop.

Section C

- Observational checklist for clinical examination to identify girls nutritional status.

SCORING PROCEDURE

Weight, hemoglobin and observational checklist were used to assess the level of nutritional status.

- According to girls' weight scoring have divided into 3 categories as follows

Score	Category
25-27 kg	Inadequate weight
28-30 kg	Moderate weight
31-33 kg	Adequate weight

- According to girls hemoglobin levels. Scoring have divided into 3 categories as follows

Score	Category
10-12 g/dl	Mild anemia
7-9 g/dl	Moderate anemia
Below 4-6g/dl	Severe anemia

- The observational checklist contains 13 statements to assess the level of nutritional status.
    a. The item no 1 to 8 is the positive items it can be scored as yes-4, merely yes-3, undecided -2, merely no-1, No-0.
    b. The item no 9 to 13 is the negative items it can score as yes-0, merely yes-1, undecided 2, merely no-3, no-4.

According to girls checklist score. The scoring is divided into 3categories. The minimum checklist score was 0 and the maximum checklist score was 62.

Score	Category
0-31	Poor
32-41	Moderate
42-62	Good

TESTING OF THE TOOL VALIDITY

The observational checklist developed and selected by the investigator based on the review of the literature. To evaluate the content validity of the tool, it will be given to 4 experts from the nursing and one for medical field evaluated the tool for content validity based on their suggestion and recommendations modification done and after establishing the validity of experts the tool was modified.

RELIABILITY

Reliability of the checklist was established by implementing the tool of girls by test retest method the reliability was found (r=0. 8) which indicates the reliability of the tool. Hence the tool was considered for proceeding with the pilot study.

Reliability of the instruments also checked for its working condition in the lab.

PILOT STUDY

The formal permission obtained from the Child Jesus Girls higher secondary school, Tirunelveli selected the 6 samples by purposive sampling technique and checked the weight and hemoglobin level. The preparation of ground nut chikki a nutritional balls 100 gms given to girls for a week again checked the mild changes of hemoglobin level is noted. Due to the short duration of the intervention there was no significant rise in weight and hemoglobin level within a week.

DATA COLLECTION PROCEDURE

The duration of the data collection period was 6 weeks. Prior to the data collection period the investigator obtained formal permission from school authorities. Then investigator met the school correspondent Sis. Sabalamary and Principal, Sis. Sasikala then introduced herself; the Principal introduced the investigator to Hostel In-charge Sis. Christoper and warden. The Hostel warden introduced the investigator to the samples. Then investigator explained about the study and its purpose and got verbal consent from the samples. The sample size consist of 60 girls 30 (experimental) and 30 (control) group were selected from sixth and seventh standard girls staying in hostel.

I and II day pretest

During the first day of data collection researcher went 9.00am to hostel and selected 10-12 years age group 80 girls and conducted pretest by the tool using demographic variables; weight checked by weighing machine and hemoglobin level was measured by hemoglobinometer and observational checklist to identify the girls' nutritional status.

First day pre assessment was done for 40 girls 1 hour takes for checking weight and for HB estimation it takes 10 minutes for each student. In the second day for another 40 girls pre assessment was done. In this I have selected 30 girls for the experimental group below weight 33kg and below l2g/dl hemoglobin level and 30 was selected for control group with average weight and hemoglobin level second day night deworming Tablet. Albendazole was given to all 60 samples.

III day to VI week

Investigator started intervention in the third day morning for the experimental group (30 samples) and 100 grams of groundnut chikki was given for six weeks before breakfast in the morning and evening in snack period. Groundnut chikki was not given to control group samples.

VI week

Post assessment was done for 2 days first day for the experimental group and a second day for the control group by using weighing machine, Hemoglobinometer and observational checklist. After finishing the investigator has said the gratitude to the respondent after the post assessment. The investigator found no difficulties during data collection.

Description of sahils Hemoglobin meter Scale

Fill hamoglobinometer tube to level of lowest of graduation [0.02cm] with hydrochloric acid diluted 1:10, place ready sterile water for dilution with second hand for checking reaction time sterile finger tip and allow to dry, and 24 gauge needle and pierce the skin, blood should flow freely without any applied pressure .Wipe away first few drops of blood and then aspirate blood into the pipette until the mark is reached [20cumm] avoid air bubbles. Wipe out side tip of the pipette with clean

absorbent paper. Blow blood out of pipette into hydrochloric acid already in haemoglobinometer tube. Blood back in to pipette several times and blow out again place the haemoglobinometer tube in the stand. Drop by drop dilute with pure water or sterile water until colors' are the same. Read results exactly after 3min.

DATA ANALYSIS

The data were collected, tabulated and analyzed by using statistical methods based on the objective.

Descriptive and inferential statistics were used to analyze the data.

The statistical data were arranged as follows

- ✓ Frequency and percentage distribution were computed for describing the sample demographic variables.
- ✓ Paired 't' test was computed to assess the effectiveness of ground nut chikki improving level of nutritional status.
- ✓ The chi - square test was computed to describe the association between the samples and their demographic variables.

PROTECTION OF SUBJECT RIGHTS

The research proposal will be approved by the dissertation committee prior to the pilot study. The permission will be obtained from the principal and head of the pediatric department of Matha College of nursing and permission will be obtained from the correspondent of selected higher secondary school. Oral consent will be obtained from children and teachers. Verbal consent was obtained from the subjects and the data collected were kept confidential.

CHAPTER-IV

DATA ANALYSIS AND INTERPRETATION

Analysis of data is a general way which involves a number of closely related operations, which performed, with the purpose of summarizing the collected data, organizing these in such a manner that they answer to the research questions.

Korlinger describes data analysis as categorizing, ordering, manipulating and summarizing the data to obtain answer to research questions. Data analysis was conducted to reduce, organize and give meaning to the data. The data were collected, analyzed and interpreted according to the objectives of the study.

This chapter presents the analysis and interpretation of data collected from 60 school children's to assess the effectiveness of ground nut chikki in improving the level of nutritional status among school children in the hostel at Tirunelveli District .

THE OBJECTIVES OF THE STUDY

During the analysis, the data were reduced to an interpretable form to summarize the findings, test the hypothesis and establish the relationship between variables.

ORGANIZATION OF THE STUDY FINDINGS

The data were analyzed and presented under the following sections.

1. To assess the pre test and post test level of Nutritional status among school children of experimental and Control group.
2. To find out the effectiveness of groundnut chikki in improving nutritional status among experimental groups of school children.

3. To find out the association between the post test weight score of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.
4. To find out the association between the post test of hemoglobin level in experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.
5. To find out the association between the post test score check list of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

Section- I

- ❖ Distribution of samples based on the selected demographic variables.

Section- II

- ❖ Distribution of samples based on the level of nutritional status in pretest and post test score of experimental and control group

Section - III

- ❖ Effectiveness of Groundnut chikki in improving the level of nutritional status among experimental groups of school children.

Section -IV

- ❖ Association between post test weight score of experimental and control group with their selected demographic variables.

Section V

- ❖ Association between post test Hemoglobin level in experimental and control group with their selected demographic variables.

Section VI

- ❖ Association between post test check list score of experimental and control group with their selected demographic variables.

SECTION-I

TABLE-1: Distribution of samples based on the selected demographic variables **N=60**

SL NO	DEMOGRAPHIC DATA	EXPERI MENTAL GROUP		CONTROL GROUP	
		F	%	F	%
1	**AGE**				
	a. 10-11Years	24	80	28	93
	b. 11-12Years	6	20	2	7
2	**RELIGION OF THE CHILD**				
	a. Hindu	20	66	12	40
	b. Christian	10	34	18	60
3	**EDUCATION OF THE PARENTS**				
	a. Illiterate	6	20	11	37
	b. Primary education	11	37	8	27
	c. Higher	12	40	10	33
	d. Graduate	1	3	1	3

4	**OCCUPATION OF THE PARENTS**				
	a. Coolie	24	80	23	77
	b. Farmer	5	17	6	20
	c. Others	1	3	1	3
5	**INCOME OF THE PARENTS**				
	a. Below Rs.3000	23	77	25	83
	b. Rs.3001-5000	5	17	4	14
	c. Rs 5001and above	2	6	1	3
6	**NUMBER OF CHILDREN**				
	a. One	0	0	26	87
	b. Two	13	43	4	13
	c. Three	8	27	0	0
	d. Four and above	9	30	0	0
7	**BIRTH ORDER**				
	a. First child	2	6	10	33
	b. Second child	11	37	16	53
	c. Third child	8	27	2	7
	d. Four and above	9	30	2	7
8	**HISTORY OF PREVIOUS ILLNESS OF CHILDREN**				
	a. Cumulative Record.	27	90	24	80
	b. Oral history	3	10	6	20
9	**HISTORY OF DE-WORMING OF CHILDREN**				
	a. Taken only once	30	100	29	97
	b. Not at all taken	0	0	1	3
10	**HISTORY OF DIET PATTERN OF CHILDREN**				
	a. Vegetarian	30	100.	29	97
	b. Non-Vegetarian	0	0	1	3

The table -1 shows the distribution of samples based on the selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness of deworming and history of diet pattern of children of frequency and percentage.

Total number 0f experimental and control school children were 60.

- Regarding the age majority of the children 24 (80%) were between 10-11 years in the experimental group and 28 (93%) were between 10-11 years in the control group.
- Regarding Religion majority of the children 20 (66%) were Hindu in the experimental group and 18 (60%) were Christian in the control group.
- About education of parents 11 (37%) of them were primary education in the experimental group whereas 11 (37%) were illiterate in the control group.
- Regarding the occupation of parents coolie had shown higher frequency 24 (80%) in the experimental groupand 23 (77%) in the control group.
- About 23 (77%) had a monthly Income below (Rupees) 3000 in the experimental group, and in control group 25 (83%) had a monthly income below (Rupees) 3000.
- With regard numbers of children in the family were two had shown the highest frequency 13 (43%) in the experimental group and in control group highest frequency is 26 (87%) were one Number of children in the family.
- About birth order majority of the children were second child 11 (37%) in experimental and 16 (53%) control group.

- Regarding the History of Deworming majority of children taken only once 30 (100%) in the experimental group whereas 29 (97%) in the control group.
- Regarding the history of the diet pattern majority of children were vegetarian 30 (100%) in the experimental group whereas 29 (97%) in the control group.

Fig-2:Distribution of samples based on Age of Children

N= 60

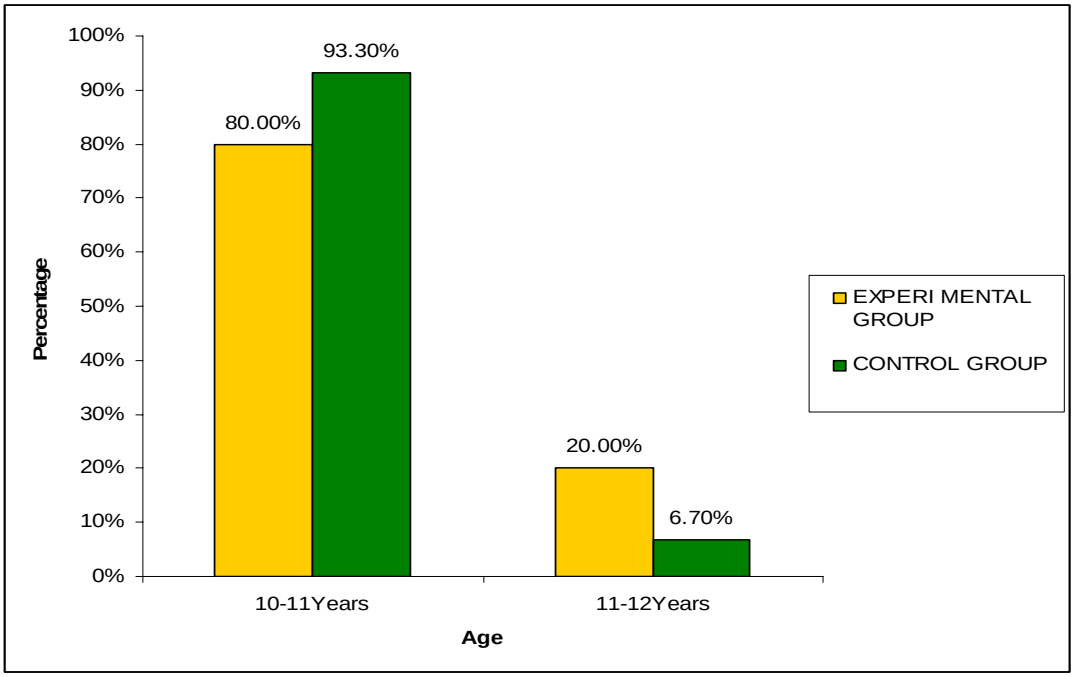


Fig-3:Distribution of samples based on Religion

N=60

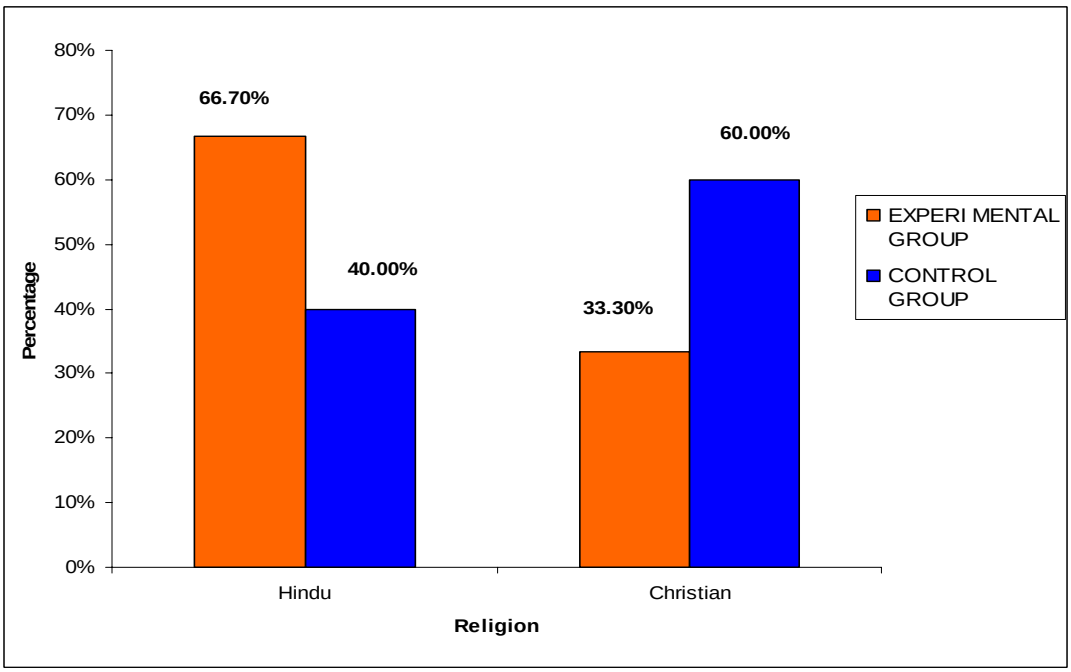


Fig-4:Distribution of samples based on Education of Parents

N=60

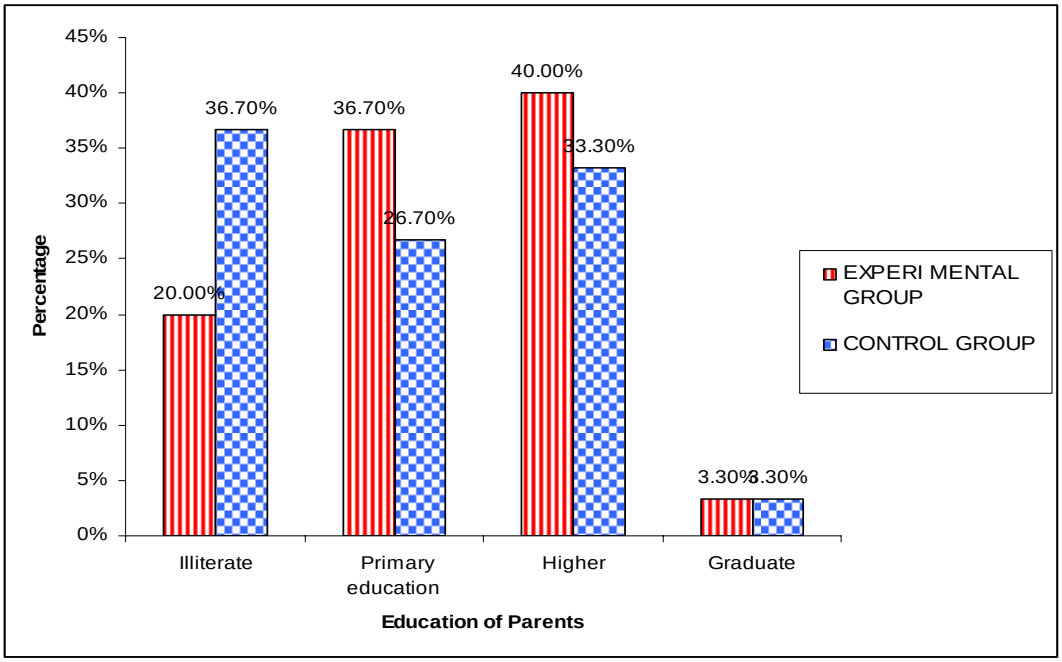


Fig-5:Distribution of samples based on Occupation of Parents

N= 60

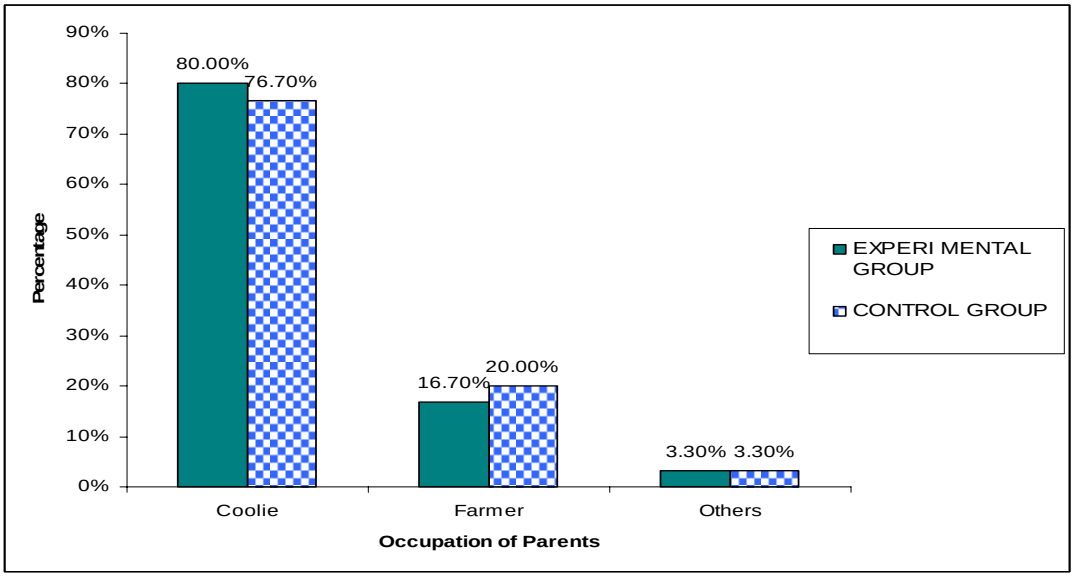


Fig-6:Distribution of samples based on Income of Parents

N= 60

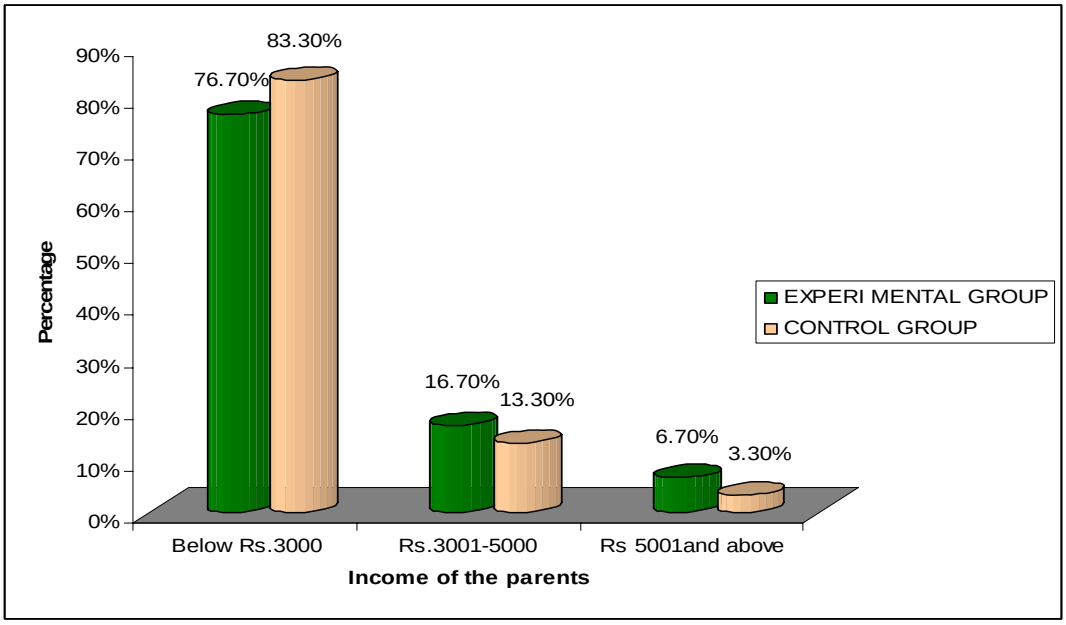


Fig-7:Distribution of samples based on No of Children in the family

N=60

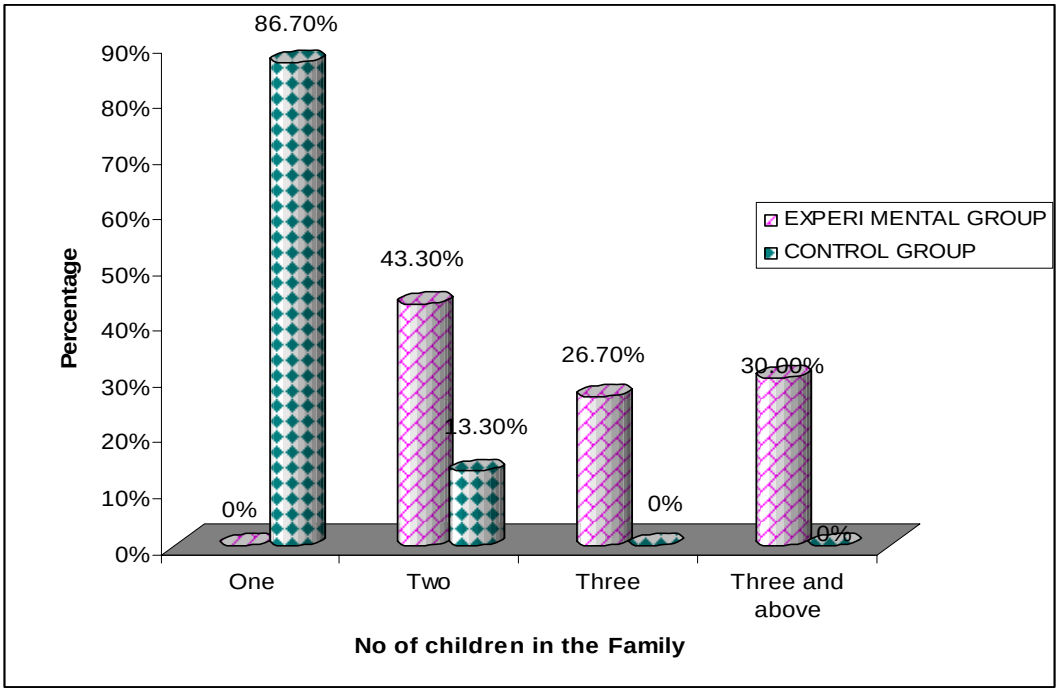


Fig-8:Distribution of samples based on Birth order

N= 60

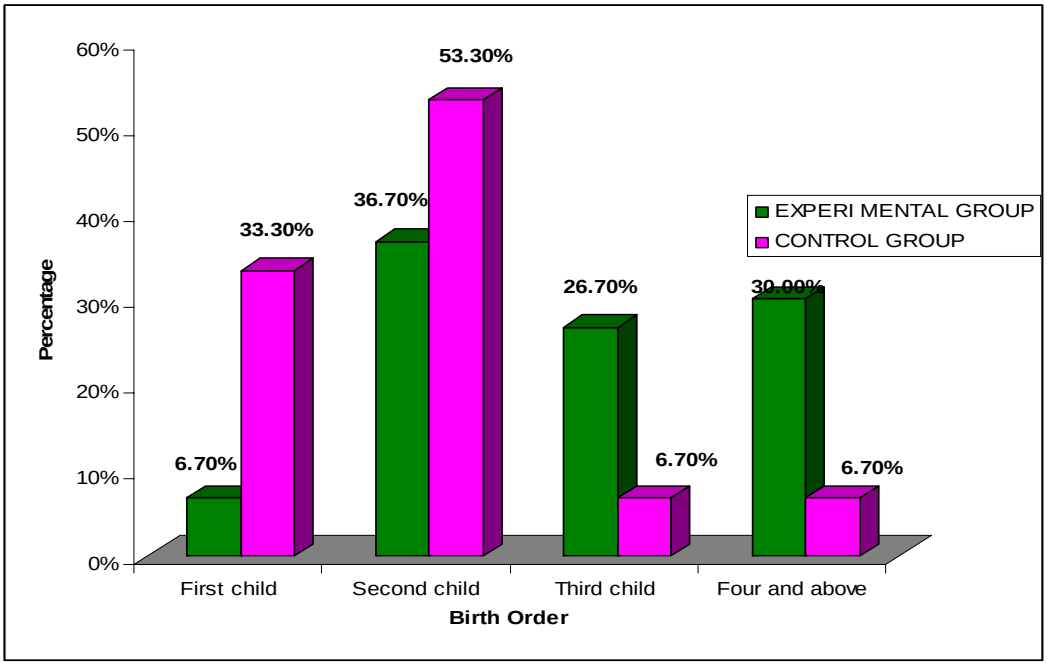


Fig-9:Distribution of samples based on History of previous Illness

N=60

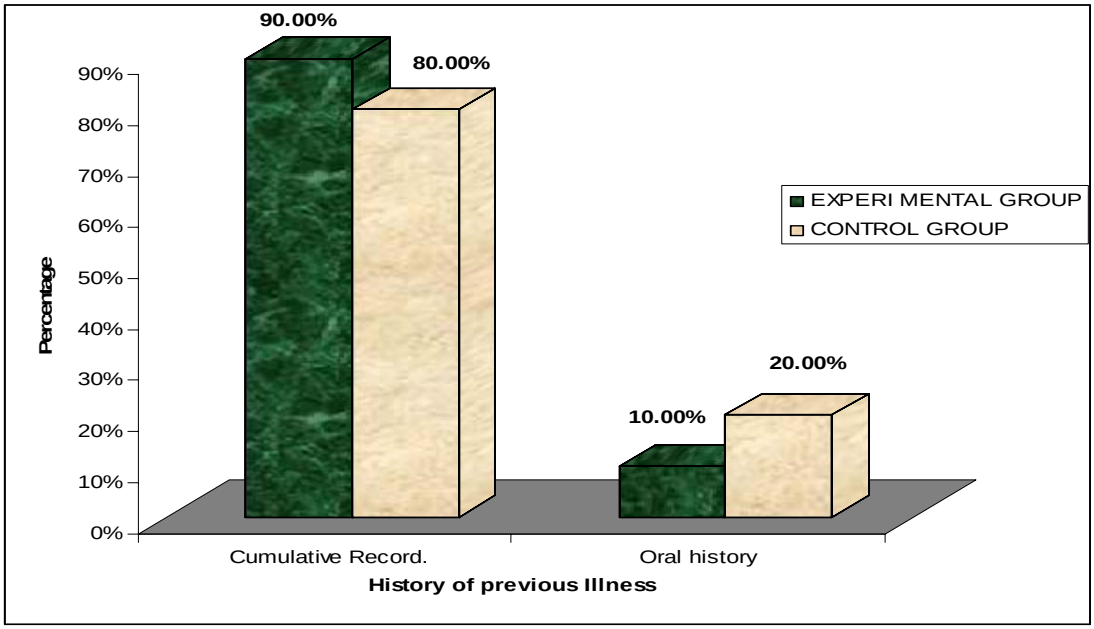


Fig-10: Distribution of samples based on History of De-worming

N= 60

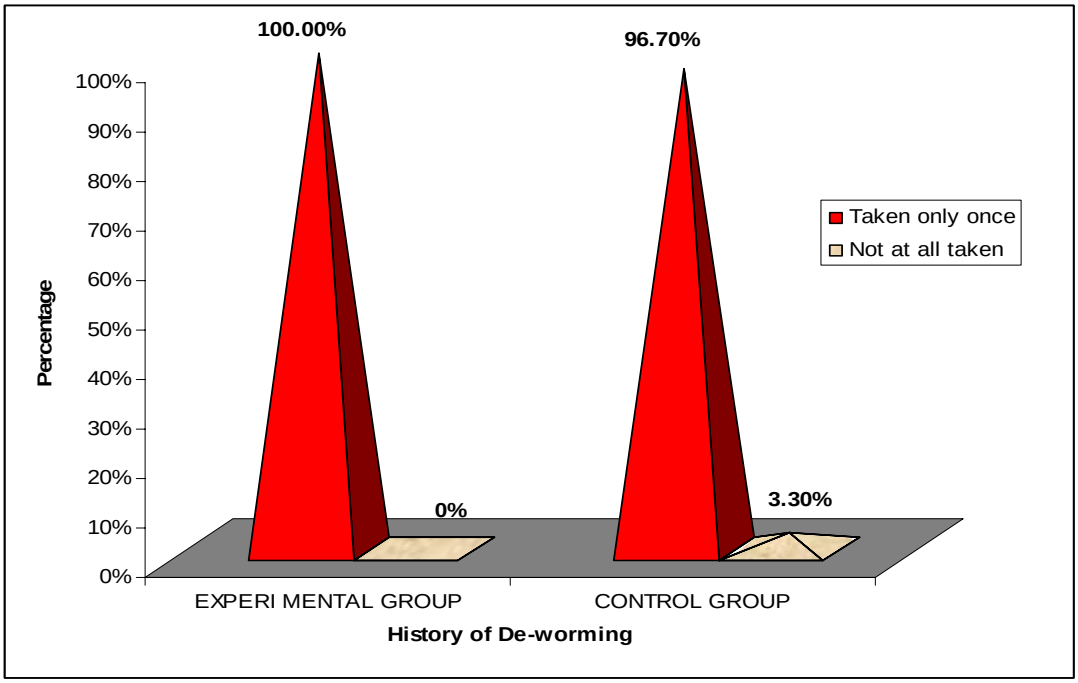
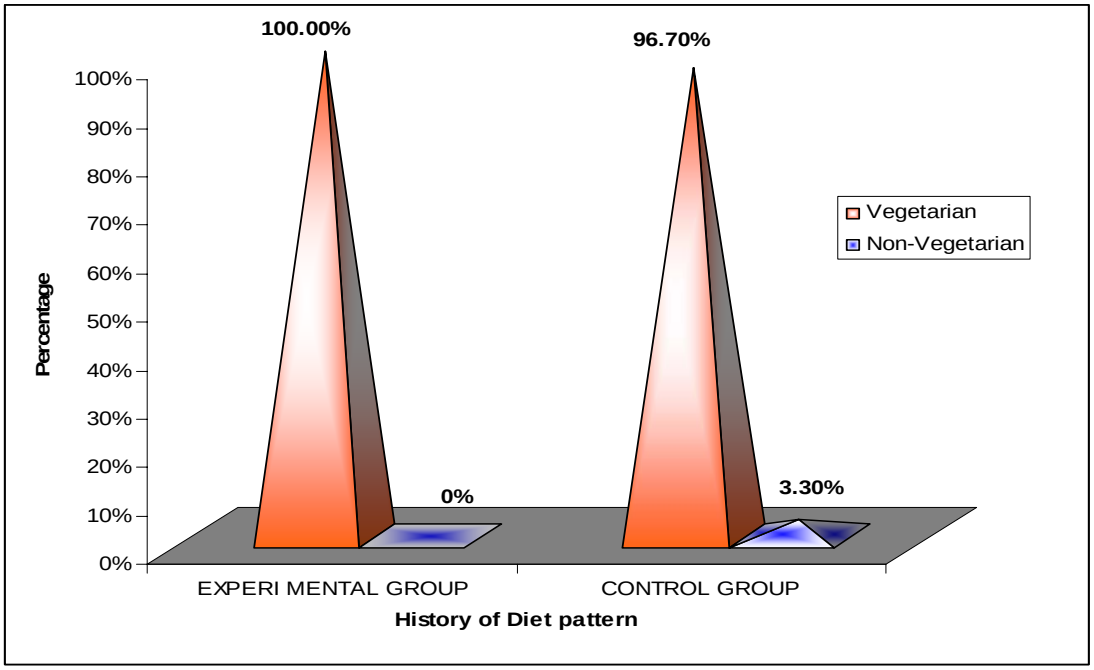


Fig-11:. Distribution of samples based on History of Diet pattern

N=60



SECTION: II

TABLE2: Distribution of samples based on level of nutritional status in pretest and post test score of experimental and control group.

N=60

LEVEL OF NUTRITIONAL STATUS	Experimental Group		Control Group	
	Pre test Frequency	Posttest Frequency	Pretest Frequency	Post test Frequency
WEIGHT				
Inadequate	19(63)	8(27)	20(66)	20(66)
Moderate	6(20)	8(27)	5(17)	5(17)
Adequate	5(70)	14(46)	5(17)	5(17)
HB				
Mild	7(23)	28(94)	18(60)	18(60)
Moderate	19(63)	1(3)	11(36)	11(36)
Severe	4(14)	1(3)	1(4)	1(4)
CHECKLIST				
Poor	4(14)	0	2(7)	5(17)
Moderate	26(86)	11(37)	26(86)	25(83)
Good	0	19(63)	2(7)	0

Figures in the parentheses indicate percentage to the total.

- Table 2 shows that the majority of the samples 19 (63%) had inadequate weight in experimental pretest, but this has improved to 14 (46%) adequate and 8 (27%) inadequate weight in post test of the experimental group.The weight of control group samples similar in pretest and post test.

- While considering the hemoglobin, 4 (14%) had severe anemia. 19 (63%) had moderate anemia in experimental group pretest but

these samples have moved to mild anemia 28 (14%) is a post test of the experimental group. The control group pretest and post test level of hemoglobin was same.

- With regard to check list the experimental group pretest shows that 26 (86%) were in moderate category and 4 (14%) in poor category but after the intervention they have moved to 11 (37%) moderate and 19 (63%) good nutritional status in the post test. The control group pretest and post test were almost similar.

Fig-12: Distribution of samples based on level of nutritional status in pretest and post test score of experimental and control group (weight)

N= 60

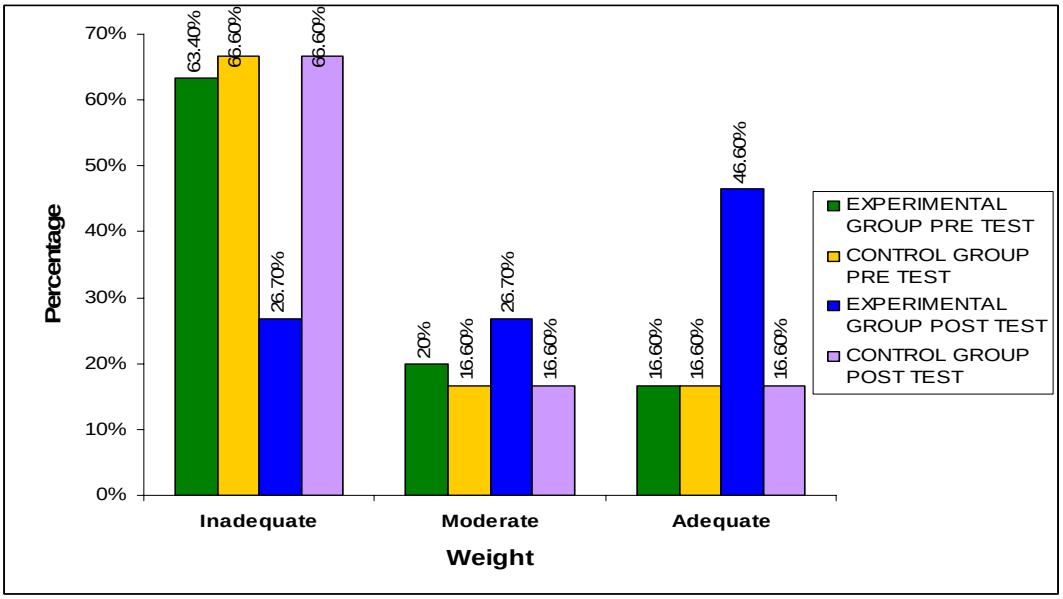


Fig-13: Distribution of samples based on level of nutritional status in pretest and post test score of experimental and control group. (Hemoglobin)

N= 60

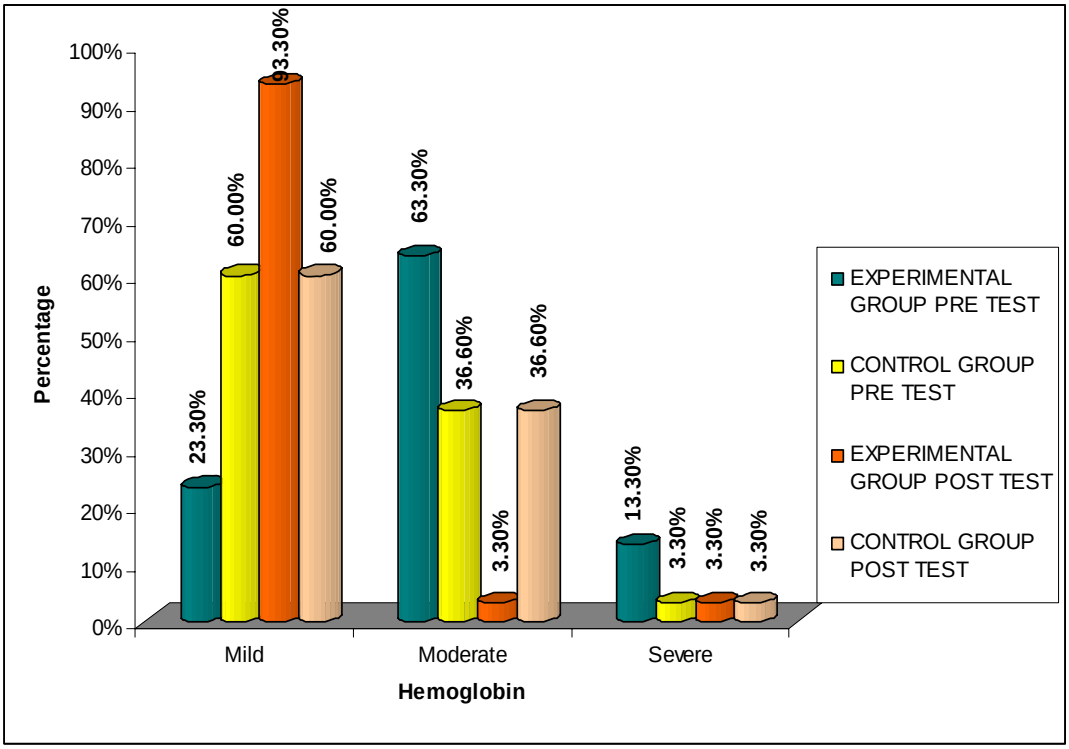
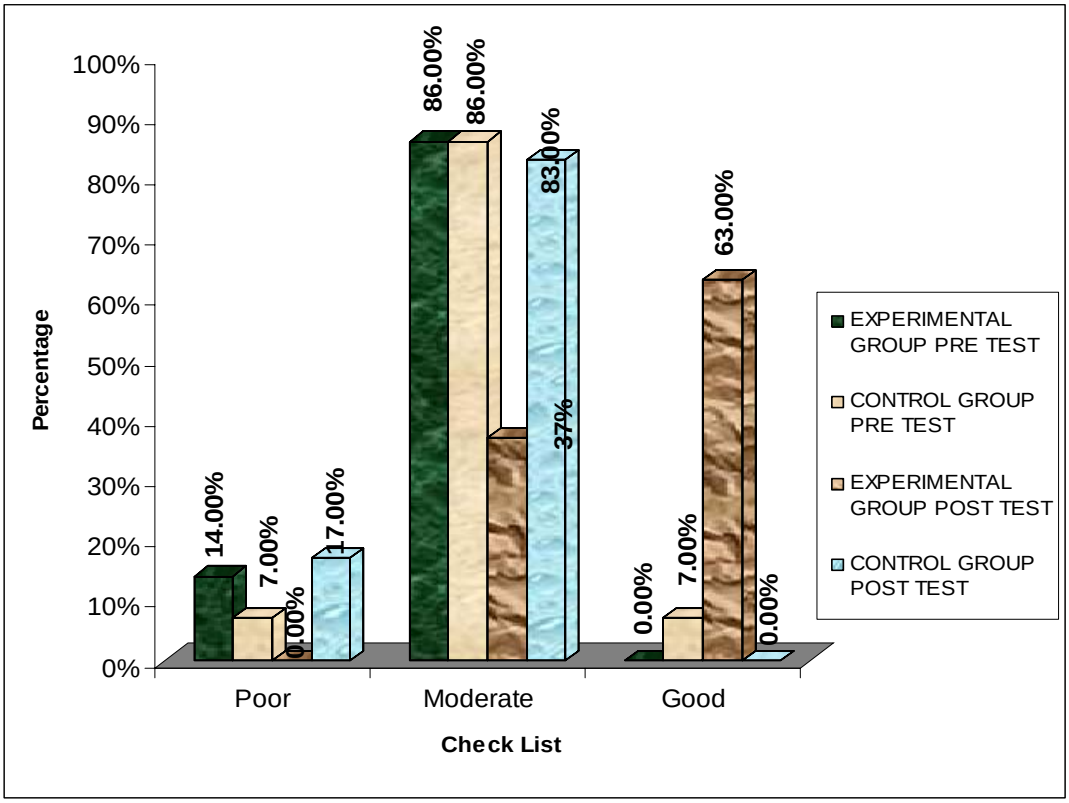


Fig-14: Distribution of samples based on level of nutritional status in pretest and post test score of experimental and control group.

(Check List)

N=60



SECTION-III

TABLE-3:Effectiveness of Groundnut chikki in improving the level of nutritional status among school children.

N=60

GROUPS	PRE TEST		POST TEST		't' VALUE	TABLE VALUE
	MEAN	S.D	MEAN	S.D		
WEIGHT						
Experimental group	26.77	4.477	30.60	4.272	*3.372	2.462
Control Group	26.73	4.394	26.87	4.305	0.029	2.462
HB						
Experimental group	9.41	1.08	11.13	1.943	*2.592	2.462
Control Group	10.15	0.813	10.15	0.813	-2.995	2.462
CHECKLIST						
Experimental group	33.50	0.21	43.1	3.66	*14.37	2.462
Control Group	33.13	0.12	34.86	0.63	2.34	2.462

* 0.05 level significant

- The Table-3shows that Experimental group shows effectiveness of ground nut chikki in improving weight with 't' value 3.372 which is greater than the table value (2.462) at 0.05 levelsand Control group does not show effectiveness of weight with 't" value is 0.029 which is lesser than the table value (2.462) at 0.05 levels.

- The Table-3shows that Experimental group shows effectiveness of ground nut chikki in improving HB with ‘t’ value 2.592 which is greater than the table value (2.462) at 0.05 levelsand Control group does not show effectiveness of weight with ‘t” value is -2.995 which is lesser than the table value (2.462) at 0.05 levels.
- The Table-3shows that Experimental group shows effectiveness of ground nut chikki in improving checklist score with ‘t’ value 14.37 which is greater than the table value (2.462) at 0.05 levelsand Control group does not show effectiveness of weight with ‘t” value is 2.34 which is lesser than the table value (2.462) at 0.05 levels.

Fig-15: Effectiveness of Groundnut chikki in improving the level of nutritional status among school children (Weight)

N=60

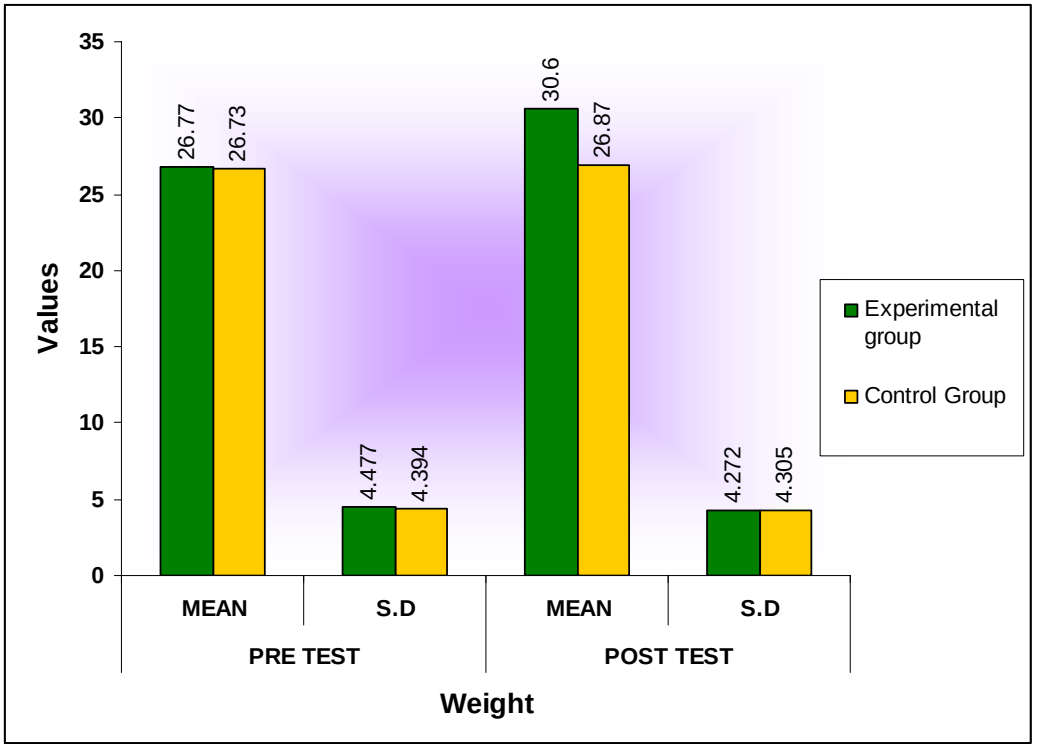


Fig- 16: Effectiveness of Groundnut chikki in improving the level of nutritional status among school children (Hemoglobin)

N=60

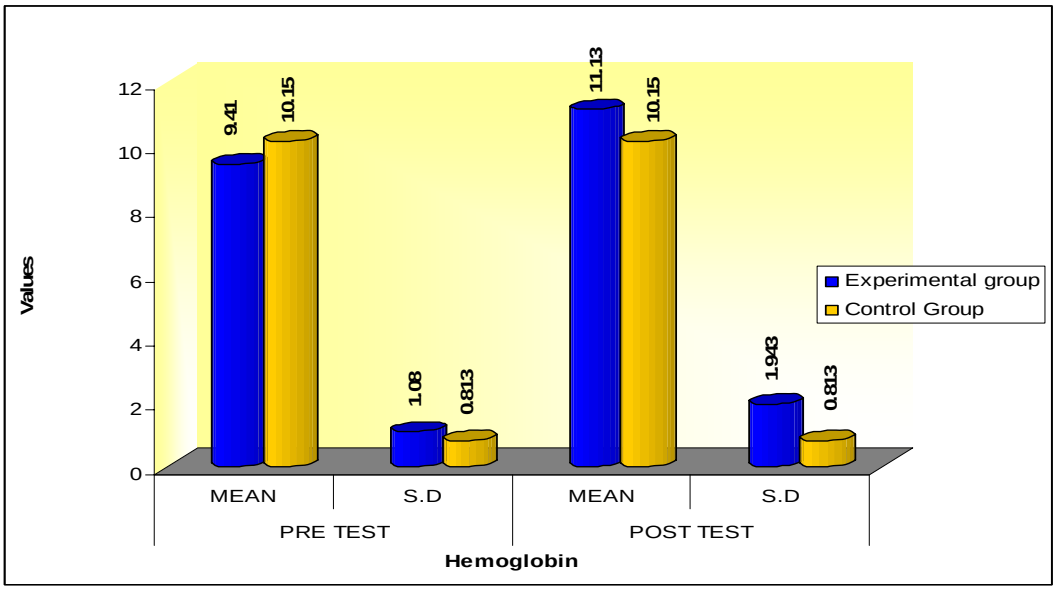
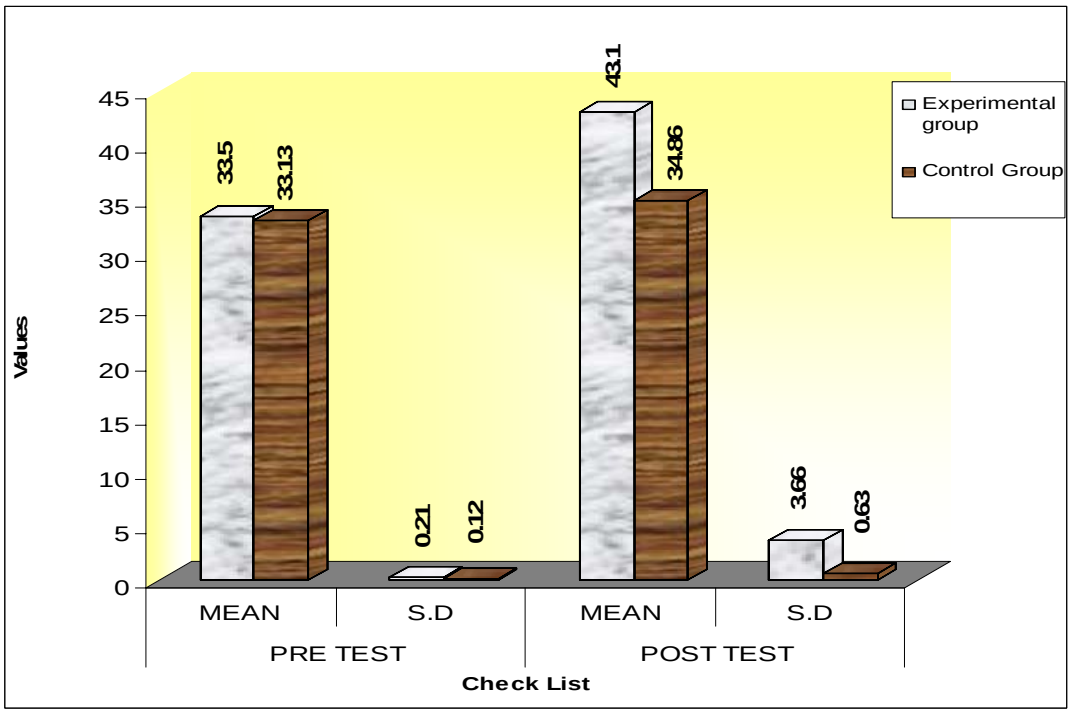


Fig-17: Effectiveness of Groundnut chikki in improving the level of nutritional status among school children (Check List)

N=60



SECTION -IV

TABLE -4: Association between post test weight score of experimental and control group with their selected demographic variables. N=60

SL NO	DEMOGRAPHIC VARIABLES	Experimental (weight)			χ^2	TABLE VALUE	Control (weight)			χ^2	TABLE VALUE
		Inadequate	Moderate	Adequate			Inadequate	Moderate	adequate		
		F	F	F			F	F	F		
1	**AGE**										
	a. 10-11Years	7	6	11	0.833^{NS}	5.99	18	5	5	1.071^{NS}	5.99
	b. 11-12Years	1	2	3			2	0	0		
2	**RELIGION OF THE CHILD**										
	a. Hindu	7	6	7	3.563^{NS}	5.99	10	0	2	1.167^{NS}	5.99
	b. Christian	1	2	2			10	5	3		
3	**EDUCATION OF THE PARENTS**										
	a) Illiterate	2	2	2	7.975^{NS}	12.59	7	0	4	0.159^{NS}	12.59
	b) Primary education	1	5	5			6	1	1		
	c) Higher	4	1	7			6	4	0		
	d) Graduate	1	0	0			1	0	0		
4	**OCCUPATION OF THE PARENTS**										
	a. Coolie	3	8	13	12.69^{S}	9.488	16	5	2	7.011^{NS}	9.488
	b. Farmer	4	0	1			3	0	3		
	c. Others	1	0	0			1	0	0		

5	**INCOME OF THE PARENTS**				0.39 NS	9.488				2.813 NS	9.488
	a. Below Rs.3000	6	8	13			17	4	3		
	b. Rs.3001-5000	1	0	0			2	0	1		
	c. Rs 5001and above	1	0	1			1	1	1		
6	**NUMBER OF CHILDREN**				5.53 NS	9.488				0.577 NS	5.99
	a. One	0	0	0			18	4	4		
	b. Two	2	2	9			2	1	1		
	c. Three	2	3	3			0	0	0		
	d. four and above	4	3	2			0	0	0		
7	**BIRTH ORDER**				6.432 NS	12.592				2. 325 NS	12.592
	a. First child	0	0	2			6	2	2		
	b. Second child	2	2	7			10	3	3		
	c. Third child	2	3	3			2	0	0		
	d. Four and above	4	3	2			2	0	0		
8	**HISTORY OF PREVIOUS ILLNESS OF CHILDREN**					5.99				1.563 NS	5.99
	a. Cumulative Record.	8	8	11			17	3	4		
	b. Oral history	0	0	3			3	2	1		
9	**HISTORY OF DE-WORMING OF CHILDREN**				0.0 NS	0.0				5.172 S	3.84
	a. Taken only once	8	8	14			20	4	5		
	b. Not at all taken	0	0	0			0	1	0		
10	**HISTORY OF DIET PATTERN OF CHILDREN**					0.0				5.172 S	3.84
	a. Vegetarian	8	8	14			20	4	5		
	b. Non-Vegetarian	0	0	0			0	1	0		

S- Significant at 5% level

NS – Non significant

- Table-4 shows that the association between the post tests weight score of experimental and control group with their selected demographic variables. The calculated chi-square value for the History of Deworming and diet pattern of control group and occupation of the experimental group was higher than the tabulated value of $p< 0.05$ level of significance. Hence researcher concluded that there was a significant association between the post test weight score of experimental and control group with their selected demographic variables.

SECTION V:

TABLE 5:Association between post test Hemoglobin level in experimental and control group with their selected demographic variables. N=60

SL NO	DEMOGRAPHIC VARIABLES	Experimental (HB)			χ^2	TABLE VALUE	Control (HB)			χ^2	TABLE VALUE
		Mild	Moderate	severe			Mild	Moderate	Severe		
1	**AGE**										
	a.10-11Years	16	11	1	1.429 NS	5.99	16	11	1	1.43 NS	5.99
	b.11-12Years	2	0	0			2	0	0		
2	**RELIGION OF THE CHILD**										
	a.Hindu	8	4	0	0.87 NS	5.99	8	4	0	0.88 NS	5.99
	b.Christian	10	7	1			10	7	1		
3	**EDUCATION OF THE PARENT**										
	a.Illiterate	8	3	0	4.89 NS	12.59	8	3	0	4.89 NS	12.59
	b.Primary education	4	4	0			4	4	0		
	c.Higher	6	3	1			6	3	1		
	d.Graduate	0	1	0			0	1	0		
4	**OCCUPATION OF THE PARENTS**										
	a.Coolie	15	7	1	2.74 NS	9.49	15	7	1	2.74 NS	9.48
	b.Farmer	3	3	0			3	3	0		
	c.Others	0	1	0			0	1	0		
5	**INCOME OF THE PARENTS**										
	a. Below Rs.3000	14	9	1	.2.74 NS	9.49	2	1	0	0.328 NS	9.48
	b. Rs.3001-5000	2	1	0			0	0	0		
	c. Rs 5001and above	2	1	0			2	1	0		
6	**NUMBER OF CHILDREN**										
	a. One	15	10	1	0.498 NS	5.99	15	10	1	0.498 NS	5.99
	b. Two	3	1	0			3	1	0		
	c. Three	0	0	0			0	0	0		
	d. four and above	0	0	0			0	0	0		

7	**BIRTH ORDER** a. First child b. Second child c. Third child d. Four and above	7 10 0 1	3 5 2 1	0 1 0 0	4.826 NS	12.59	7 10 0 1	3 5 2 1	0 1 0 0	4.826 NS	12.59
8	**HISTORY OF PREVIOUS ILLNESS OF CHILDREN** a. Cumulative Record. b. Oral history	14 4	10 1	0 1	4.874 NS	5.99	14 4	10 1	0 1	4.874 NS	5.99
9	**HISTORY OF DE-WORMING OF CHILDREN** a. Taken only once b. Not at all taken	18 0	11 0	0 1	30.00 S	5.99	18 0	11 0	0 1	30.00 S	5.99
10	**HISTORY OF DIET PATTERN OF CHILDREN** a. Vegetarian b. Non-Vegetarian	18 0	11 0	0 1	30.00 S	5.99	18 0	11 0	0 1	30.00 S	5.99

S- Significant at 5% level

NS – Non significant

- Table (5) shows that there is a significant association between the post test Hemoglobin level in experimental and control group with their selected demographic variables. The calculated chi-square value for the history of Deworming and History of diet pattern of children of the experimental group and the control group was higher than the tabulated value of $p< 0.05$ level of significance.

SECTION VI

TABLE 6:Association between post test check list score of experimental and control group with their selected demographic variables. N=60

SL NO	DEMOGRAPHIC VARIABLES	Experimental (Chick list)		χ^2	TABLE	Control (Chick list)		χ^2	TABLE VALUE
		Moderate	High			Poor	Moderate		
1.	**AGE**								
	a. 10-11	10	14	2.51^{NS}	3.84	4	24	1.734^{NS}	3.84
	b. 11-12	1	5			1	1		
	c.								
2.	**RELIGION OF THE CHILD**								
	a. Hindu	10	10	$4,567^{NS}$	3.84	4	8	3.996^{S}	3.84
	b. Christian	1	9			1	17		
3.	**EDUCATION OF THE PARENTS**								
	a. Illiterate	5	1	8.24^{S}	7.82	0	1	12.818^{S}	7.82
	b. Primary education	4	7			0	8		
	c. Higher	2	10			4	6		
	d. Graduate	1	1			1	0		
4.	**OCCUPATION OF THE PARENTS**								
	a. Coolie	7	17	3.261^{NS}	5.99	4	19	0.198^{NS}	5.99
	b. Farmer	3	2			1	5		
	c. Others	1	0			0	1		
	d.								

5.	**INCOME OF THE PARENTS**			1.741 ^{NS}	5.99			9.537^{S}	5.99
	a. Below Rs.3000	7	16			2	23		
	b. Rs.3001-5000	3	2			2	2		
	c. Rs 5001and above	1	1			1	0		
6.	**NUMBER OF CHILDREN**			3.414^{NS}	7.82			11.425^{S}	7.82
	a. One	0	0			2	24		
	b. Two	5	8			3	1		
	c. Three	1	7			0	0		
	d. four and above	5	4			0	0		
7.	**BIRTH ORDER**			2.24^{NS}	7.82			11.827^{NS}	7.82
	a. First child	1	1			2	8		
	b. Second child	3	8			1	15		
	c. Third child	2	6			2	0		
	d. Four and above	5	4			0	2		
8.	**HISTORY OF PREVIOUS ILLNESS OF CHILDREN**			0.015^{NS}	3.84			1.5^{NS}	3.84
	a. Cumulative Record.	10	17			3	21		
	b. Oral history	1	2			2	4		
9.	**HISTORY OF DE-WORMING OF CHILDREN**			0^{NS}	3.84			4.361^{S}	3.84
	a. Taken only once	11	19			4	25		
	b. Not at all taken	0	0			1	0		
10.	**HISTORY OF DIET PATTERN OF CHILDREN**			0^{NS}	3.84			4.361^{S}	3.84
	a. Vegetarian	11	19			4	25		
	b. Non-Vegetarian	0	0			1	0		

S- Significant at 5% level

NS –Non significant

- Table 6 shows that the association between the post test checklist score of experimental and control group with their selected demographic variables. The calculated chi-square value for Religion of children and education of parents of the experimental group was higher than the tabulated value of $p<0.05$ level of significance. The calculated chi-square value for religion of children, Education of parents, Income of parents, Number of children history of Deworming and history of Diet pattern of control group was higher than the tabulated value at $p< 0.05$ level of significance.

CHAPTER V
DISCUSSION

“The Hand that Rocks the cradle is the Hand that Rules the world”

- ***William Rose Wallace***

This chapter presents the interpretation of the statistical findings. It has been discussed based on the objectives of the study.

The aim of this study is to assess the effectiveness of ground nut chikki on improving the level of nutritional status among school children in the hostel at Tirunelveli District.

An assessment approach was used for the present study. The study population comprised of school children. The sample size is 60. A purposive sampling technique was used to collect the data.

The data collection tools used were demographic variables, weight by weighing machine, hemoglobin level by hemoglobino meter and observational checklist was used to assess the effectiveness of ground nut chikki is improving the level of nutritional status. The content validity and reliability was established for all the tools. The pilot study was done on 6 school children who met the sampling criteria.

During the period of data collection the data were collected from the school children by using the tool, which had already been prepared by the investigator.

The findings of the study had been discussed in terms of objectives and hypothesis stated in the study.

The objective of the study was

1. To assess the pre test and post test level of Nutritional status among school children of experimental and Control group.
2. To find out the effectiveness of groundnut chikki in improving nutritional status among experimental group of school children.
3. To find out the association between the post test weight score of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.
4. To find out the association between the post test of hemoglobin level in experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.
5. To find out the association between the post test score check list of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

Objective – 1

To assess the pre test and post test level of Nutritional status among school children of experimental and control group

Table 2 shows that the majority of the samples 19 (63%) had inadequate weight in experimental pretest, but this has improved to 14 (46%) adequate and 8 (27%) inadequate weight in post test of the

experimental group.The weight of control group samples similar in pretest and post test.

While considering the hemoglobin, 4 (14%) had severe anemia. 19 (63%) had moderate anemia in experimental group pretest but these samples have moved to mild anemia 28 (14%) is a post test of the experimental group. The control group pretest and post test level of hemoglobin was same.

With regard to check list the experimental group pretest shows that 26 (86%) were in moderate category and 4 (14%) in poor category but after the intervention they have moved to 11 (37%) moderate and 19 (63%) good nutritional status in the post test. The control group pretest and post test were almost similar.

H_1 – There is a significant difference between mean pretest and post test score of experimental group of children in improving the level of nutritional status after ground nut chikki.

H_2- There is a significant difference between a mean post test score of the experimental group and mean post test score of the control group of school children in improving the level of nutritional status.

Therefore hypothesis H_1 and H_2 is supported

Objective-2

To find out the effectiveness of groundnut chikki in improving nutritional status among experimental group of school children

Experimental group shows effectiveness of ground nut chikki in improving weight with ‘t’ value 3.372 which is greater than the table value (2.462) at 0.05 levelsand Control group does not show effectiveness of weight with ‘t” value is 0.029 which is lesser than the table value (2.462) at 0.05 levels.

Experimental group shows effectiveness of ground nut chikki in improving HB with ‘t’ value 2.592 which is greater than the table value (2.462) at 0.05 levelsand Control group does not show effectiveness of weight with ‘t” value is -2.995 which is lesser than the table value (2.462) at 0.05 levels.

Experimental group shows effectiveness of ground nut chikki in improving checklist score with ‘t’ value 14.37 which is greater than the table value (2.462) at 0.05 levelsand Control group does not show effectiveness of weight with ‘t” value is 2.34 which is lesser than the table value (2.462) at 0.05 levels.

The similar study was conducted by **the Department of Nutrition and Epidemiology, USA;** frequent nut consumption is associated with lower rates of coronary artery disease (CAD). Also, nut-rich diets improve the serum lipid profile of participants in dietary intervention trials. However, nuts fatty foods, and in their regular consumption may lead to body weight gain. Selected diets including nuts frequently have a higher body mass index or a tendency to gain weight.

Riosonar MG et.al., 2008 Philippines who have conducted weekly iron supplementation delivery system on the prevalence of anemia among anemic school children aged 6-12 years with hemoglobin < 12gldl. Compliance to iron supplementation was directly observed and recorded using a monitoring form and a supplementation calendar. Hemoglobin concentration, weight and height were determined at baseline and at post-intervention. At the post intervention, the participants mean hemoglobin concentration increased anemia prevalence was reduced by 53% and 84.3% of the participants had 100% compliance to supplementation.

Objective-3

To find out the association between the post test weight score of experimental and control group and their selected demographic variables.

The result shows that there is a significant association between the post test weight score experimentaland control group and their selected demographic variables. The calculated chi-square value for the History of Deworming and diet pattern of control group and occupation of parents in the experimental group was higher than the tabulated value.

H_3: There is a significance Association between mean post test weight score of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

Therefore hypothesis H_3 is supported

Objective-4

To find out the association between the post test of hemoglobin level in experimental and control group with their selected demographic variables.

The result shows that there is a significant association between the post test Hemoglobin level in experimental and control group with their selected demographic variables. The calculated chi-square value for the history of Deworming and History of diet pattern of children of the experimental group and the control group was higher than the tabulated value.

Desai V.S. (2003) evidence's ' In India diets which are predominantly vegetarian and lacking in animal proteins which in tylain and low in ascorbic acid contents, the bio availability of iron is poor, this coupled with poor iron absorption contributes to widespread of iron deficiency anemia.

The similar study was conducted by **the Nags TT, et al.,** Micronutrient deficiencies are associated with impaired growth and cognitive function. A school based fortification program might benefit school children but a higher prevalence of parasite infestation might affect effectiveness. A randomized double blind, placebo- controlled 2X2 factorial trial was conducted to assess the efficiency of multi-micronutrient fortified biscuits with de-worming on growth. Children receiving Albendazole plus FB had the lowest parasite load after four months. Combining multi-micronutrient fortified biscuits with de-worming is an effective strategy.

H_4-There is a significance Association between meanpost test of hemoglobin level in experimental and control group with their selected demographic variable such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

Therefore hypothesis H_4 Supported.

Objective -5

To find out the association between the post test score check list of experimental and control group with their selected demographic variable.

The result shows that there is the association between the post test checklist score of experimental and control group with their selected demographic variables. The calculated chi-square value for Religion of children and education of parents of the experimental group was higher than the tabulated value. The calculated chi-square value for religion of children, Education of parents, Income of parents, Number of children history of Deworming and history of Diet pattern of control group was higher than the tabulated value at $p< 0.05$ level of significance.

H_5. There is a significance Association between meanpost test score check list of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of de-worming and history of diet

Therefore H_5 was supported.

CHAPTER-VI
SUMMARY, IMPLICATION, RECOMMENDATION AND CONCLUSION

This chapter deals with a summary of the study findings and its implications for nursing and health care services. It clarifies the limitations of the study, the implications and recommendations given for different areas like nursing education, nursing practice, administration of health care delivery system and nursing research.

SUMMARY OF THE STUDY

The purpose of the study was to assess the effectiveness of groundnut chikki in improving the level of nutritional status among school children. An evaluative quasi experimental research design was used to conduct this study among school children of experimental and control group at selected hostel in Tirunelveli District, Tamil Nadu.

The study was conducted from Aug 2011. An evaluation quasi experimental research design was used on the basis of inclusion criteria conceptual framework was formulated according to based on BERTALANTY J.Y. KENNY open system model (1969).

TOOL - I Demographic data on girls' age

TOOL - II Hemoglobino meter for HB estimation and weighing machine-checking weight.

TOOL - III Observational check list for clinical examination of identity girls nutritional status.

OBJECTIVES

1. To assess the pre test and post test level of Nutritional status among school children of experimental and Control group.
2. To find out the effectiveness of groundnut chikki in improving nutritional status among experimental group of school children.
3. To find out the association between the post test weight score of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.
4. To find out the association between the post test of hemoglobin level in experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.
5. To find out the association between the post test score check list of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

HYPOTHESES

H_1 - There is a significant difference between mean pretest and post test score of an experimental group of children in improving the level of nutritional status after groundnut chikki.

H_2 - There is a significant difference between a mean post test score of the experimental group and mean post test score of the control group of school children in improving the level of nutritional status.

H_3- There is a significant Association between mean post test weight score of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

H_4 - There is a significant Association between post test of hemoglobin level in experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

H_5- There is a significant Association between post test score check list of experimental and control group with their selected demographic variables such as age, religion, education, occupation, income of parents, number of children in the family, birth order, history of previous illness, history of deworming and history of diet.

MAJOR FINDINGS OF THE STUDY

- Regarding the age majority of the children 24 (80%) were between 10-11 years in the experimental group and 28 (93%) were between 10-11 years in the control group.Regarding Religion majority of the children 20 (66%) were Hindu in the experimental group and 18 (60%) were Christian in the control group. About education of parents 11 (37%) of

them were primary education inthe experimental group whereas 11 (37%) were illiterate in the control group.Regarding the occupation of parents coolie had shown higher frequency 24 (80%) in the experimental group and 23 (77%) in the control group. About 23 (77%) had a monthly Income below (Rupees) 3000 in the experimental group, and in control group 25 (83%) had a monthly income below (Rupees) 3000.With regard numbers of children in the family were two had shown the highest frequency 13 (43%) in the experimental group and in control group highest frequency is 26 (87%) were one Number of children in the family.About birth order majority of the children were second child 11 (37%) in experimental and 16 (53%) control group.Regarding the History of Deworming majority of children taken only once 30 (100%) in the experimental group whereas 29 (97%) in the control group.Regarding the history of the diet pattern majority of children were vegetarian 30 (100%) in the experimental group whereas 29 (97%) in the control group.

- The majority of the samples 19 (63%) had inadequate weight in experimental pretest, but this has improved to 14 (46%) adequate and 8 (27%) inadequate weight in post test of the experimental group. The weight of control group samples similar in pretest and post test.While considering the hemoglobin, 4 (14%) had severe anemia. 19 (63%) had moderate anemia in experimental group pretest but these samples have moved to mild anemia 28 (14%) is a post test of the experimental group. The control group pretest and post test level of hemoglobin was same. With regard to check list the experimental group pretest shows that 26 (86%) were in moderate category and 4 (14%) in poor category but after the intervention they have moved to 11 (37%) moderate and 19 (63%) good nutritional status in the post test. The control group pretest and post test were almost similar.

- Experimental group shows effectiveness of ground nut chikki in improving weight with ‘t’ value 3.372 which is greater than the table value (2.462) at 0.05 levelsand Control group does not show effectiveness of weight with ‘t” value is 0.029 which is lesser than the table value (2.462) at 0.05 levels. Experimental group shows effectiveness of ground nut chikki in improving HB with ‘t’ value 2.592 which is greater than the table value (2.462) at 0.05 levelsand Control group does not show effectiveness of weight with ‘t” value is -2.995 which is lesser than the table value (2.462) at 0.05 levels. Experimental group shows effectiveness of ground nut chikki in improving checklist score with ‘t’ value 14.37 which is greater than the table value (2.462) at 0.05 levelsand Control group does not show effectiveness of weight with ‘t” value is 2.34 which is lesser than the table value (2.462) at 0.05 levels.
- The result shows that there is a significant association between the post test weight score experimentaland control group and their selected demographic variables. The calculated chi-square value for the History of Deworming and diet pattern of control group and occupation of parents in the experimental group was higher than the tabulated value.
- The result shows that there is the association between the post test checklist score of experimental and control group with their selected demographic variables. The calculated chi-square value for Religion of children and education of parents of the experimental group was higher than the tabulated value. The calculated chi-square value for religion of children, Education of parents, Income of parents, Number of children history of Deworming and history of Diet pattern of control group was higher than the tabulated value at $p< 0.05$ level of significance.

NURSING IMPLICATIONS

The findings of this study had implications in various areas of nursing i.e., Nursing practice, administration, education and nursing research.

IMPLICATION IN NURSING PRACTICE

- The finding of this study will help the nurse to plan for assessment of nutritional status to reduce nutritional deficiencies among school children.
- A nutritional deficiency problem directly affects their physical, mental and social development of school children. So this study will help the nurse to identify the particular areas and plan the nursing care for school children.
- Nursing practices in the hospital, schools and community should be planned and organized according to the level of nutritional status.
- In meeting the nutritional requirements of children, adequate training and supervision should be provided for the nursing personnel in monitoring the nutritional status and providing health education.
- Special nutritional program should be implemented for the school children about nutritional deficiencies and its prevention.
- Motivate the school teacher and nursing personnel to participate in nutritional workshops and seminar in blocks, District, states and national level.

IMPLICATION IN NURSING EDUCATION

- It is important to have educated program on the benefits of nutritional intervention.
- Staff development programs needed to be arranged in importance of nutritional Balls among school children.
- Nursing students can be taught about identification of nutritional deficiencies and its disorder.
- Various screening programs for school children to prevent nutritional deficiency disorder can be included in the nursing curriculum.
- Nursing curriculum should emphasize training on early identification of nutritional deficiency disorder.

IMPLICATION IN NURSING ADMINISTRATION

- ✓ All the nurses can be taught about the importance of nutritional intervention in improving nutritional status.
- ✓ Nurse administrators can disseminate the research knowledge into the practice so that the school children will become beneficial.
- ✓ In service, education should be provided to the nursing personnel at various levels to make awareness regarding innovations in nutritional intervention in preventing nutritional deficiency disorders.
- ✓ Update the nurses' knowledge about current practices through workshop and conference. This will educate holistically to children about nutrition and its improvement.
- ✓ The nurse administrator should coordinate her work along with the staff to encourage them to do select nursing measures like the benefits of groundnut chikki in improving nutritional status among girls.
- ✓ Nursing administrator should organize in service educational programme regarding improvement of nutritional status.

NURSING RESEARCH

- Nurses are being the largest group in the health care delivery system and being close to children should take initiatives to conduct further research regarding groundnut chikki.
- This study finding motivates researchers to conduct further studies regarding groundnut chikki in term of improving the health status of school children.
- Nurse researchers can compare the effect of the groundnut chikki with other Nutritional balls.

RECOMMENDATION

- A similar study can be conducted by using a large sample to generalize findings.
- Comparative study can be conducted among private and Govt. School children.
- A study can be conducted to identify the factors influencing nutritional deficiency among school children.
- A qualitative study could be carried out to explore in depth in improving levels of Nutritional status by groundnut chikki.
- A same study can be conducted in community settings.
- Educational programs can be devised to create awareness among the mother to promote the nutritional status of school children.
- Comparative study can be conducted among the Government and private school hostel girls.

CONCLUSION

In this study, experimental group shows effectiveness of groundnut chikki in improving the level of nutritional status, such as weight, hemoglobin, and checklist. But in the control group, no improvement is seen in weight hemoglobin and checklist. Groundnut chikki is more effective in improving levels of nutritional status among school children in Hostel girls. As a pediatric nurse we have the responsibility of creating awareness about various nutritional deficiency disorders and measures to improve nutritional status. Also the government can launch nutritional programs to improve nutritional status of school children.

REFERRENCES

- Adele Pillitteri (1992). ***"Maternal and child health nursing care of the child bearing and child rearing family",*** (5th Ed)., Philadelphia: Lippincott Williams and Wilkins.
- Agrawal .D.N. (2006). Approach to the diagnosis of anemia. Health screen.
- Abha, Aggarval & Padam Singh (2002). "Nutritional status and dietary intake **of** preschool children Delhi", ***Indian Paediatrics,*** 39:668-670.
- Behrman RE & Kliegman^RN (2000). ***"Nelson textbook of pediatrics",*** (16"' Ed.), Philadelphia: Lippincott.
- Bhat LA, Amin S & Shah GN (1997). "Impact of Social Medical factors on preschool malnutrition, An appraisal in an urban setting", ***Indian Journal of Maternal and Child Health,*** 8 (1): 5-8.
- Devi SB (1997). "Nutritional, status of preschool children in Manipur", ***Indian Journal of Maternal and Child Health,*** 8 (3-4): 79-83.
-
- Dudek SG (2005). ***"Nutrition essentials for nursing practice",*** Philadelphia: Lippincott Williams and Wilkins.
- Elizabeth KE (2005). ***"Nutrition and Child Development",*** (3rd Ed.), Hyderabad: Paras Medical Publisher.
- Ghai OP (2005). ***"Essential Paediatrics",*** (7th Ed.), Delhi: Mehta Offset Works.
- Gupta S (2005). ***"The short textbook of pediatrics",*** (8th Ed.), New Delhi: Jaypee Company.
- Indurani, Arumuganathan J & Muthuvel I (2005). "Role of nutrition in human health", ***Wide Spectrum,*** 1 (7).
- Jay S. Ross, Philip, Harvey WJ (2003). "Contribution of breastfeeding of vitamin A nutrition of infants a simulation model", ***Bulletin of the World Health Organization,*** 81 (2): 80-86.

- Khandair, DW et al., (1998). "Risk factors for malnutrition in preschool children: A population based case control study", ***Indian Journal of Maternal and Child Health,*** 9 (3): 75.
- Kothari (2002). "The impact of *2,00,000* IU vitamin A supplementation on morbidity and mortality in urban slum children of Bombay", ***Indian Paediatrics,*** 39:1109.
- Lutneng JC et al., (2003). "Association between clinically meaningful .Behavior problems and overweight in children", ***Indian pediatrics,*** 112 (5): 1138-1145.
- Marlow RD & Redding BA (1988). ***"Textbook of Paediatric Nursing",*** (6th Ed.), Philadelphia: W.B. Saunders Company.
- Mattos A et al., (1999). "Nutritional status and dietary habits of Indian children from altoxingu (Central Brazin) according to age", ***Journal of Clinical,***
- Mishra SP, Lahiri K & Luther G (1999). "Child nutrition in India", ***Journal of Indian Medical Association,*** 97 (6): 113-115.
- Nagre DK & Muttunga JN (1999). "The prevalence of malnutrition in Kenya East Africa", ***Medical Journal,*** 76 (7): 378-380.
- Nanda S, Mishra CP & Shukla A (1997). "Chronic malnutrition among infants of Varanasi", ***Indian Journal of Maternal and Child Health,*** 22 (2): 85-88.
- Park (2005). ***"Park's text book of preventive and social medicine",*** (18th Ed.), Jabalpur: Banarasidas Bhanot.
- Parthasarathy A et al., (2002). ***"IAP Textbook of Paediatrics",*** (2nd Ed.), New Delhi: Jaypee Brothers Company.
- Piyush Gupta, Abhaya Indrayan (2002). "Effect of vitamin A, supplementation on childhood morbidity and mortality in Delhi, ***Indian Pediatrics,*** (39): 1025.
-

- Polit DF & Hungler BP (1999). ***"Nursing research principles and methods",*** (6th Ed.), Philadelphia: Lippincott.
- Potter & Perry (2001) "***Basic Nursing", (***5th Ed***)*** Philadelphia: Mosby Publications.
- Rahamatullah et al., (2002). "Liking vitamin A with reduction of mortality and morbidity in Trichy District", ***Indian Paediatrics,*** (39): 1107.
- Rajini Jatia . Priti Janiya(2003) Dietary intake of tribal adolescent girls of Dhar District in Madhya Pradesh . The Indian Journal of nutrition and deities.
- Ray SP et al., (2000). "Rapid assessment of nutritional status and dietary pattern in a Municipal area", ***Indian Journal of Community Medicine,*** 25 (1): 14-18.
- Roy S & Ray S (2000). ^"Prevention of malnutrition", ***Journal of Indian Medical Association,*** 98 (9): 1-3.
- Sharma, JN & Bora P (1998). "Mid-arm circumference as an index of protein energy malnutrition between 6 to 12 months age", ***Indian Paediatrics,*** 35 (10): 1005-1010.
- Swaminathan M (2006). ***"Advance textbook on food and nutrition",*** (2nd Ed.), Bangalore: the Bangalore Printing.
- Theresa A. Nicklas et al, (1998). "Prevalence of anemia and Iron deficiency in urban Haitian children two to five years of age", ***Journal of Tropical Paediatrics,*** 44: 113.
- Toyama N et al., (2001). "Mother's working status and nutritional ^status of children under the age of five in urban low-income community, Surabaya, Indonesia", ***Journal of Tropical Paediatrics,*** 47:179.
- Verma .M etal (2004 Factors influencing anemia among girls of school age from the slums of Ahmadabad city. Indian Journal of community medicine.

- Vijaya ragavan .K. (2001) Iron deficiency anemia in India . Indian Journal of nutrition dietetics.
- Veena Kalva et al., (2001). "Vitamin E administration and reversal of neurological deficits in protein energy malnutrition", ***Journal of Tropical Paediatrics,*** 47:39.
- Williams SR (1989). ***"Nutrition and Diet Therapy",*** (7^{th} Ed.), Philadelphia: Mosby Publications.)
- Walker (2000) Anemia with protein energy malnutrition. The Journal of nutrition and dietetics.
- Zlotkcin .H.S (2004, Controlling iron deficiency anemia Through the use of home fortified complementary foods, "Indian journal of pediatrics.

WEB SITES

- www.casi.org.uk/info/unicef
- www.unicef.org
- www.ncbi.nlm.nih.gov
- www.ncbi.nlm.gov.entres/query
- www.ijppediatricsindia.org
- www.statistics.gov.lk/social/nutrition
- www.pjbs.org/pjnonline
- www.pubmed.com

LETTER SEEKING PERMISSION TO CONDUCT STUDY
MATHA COLLEGE OF NURSING
(Affiliated to the Tamilnadu Dr.M.G.R. Medical University)
Vaanpuram, Manamadurai – 630 606.
Sivagangai District, Tamilnadu

From

Prof: Shaberabanu, M.Sc., (N), (PhD)
Principal

To

The Correspondent,
Child Jesus Higher secondary School,
Samathanapuram,
Tirunelveli

Respected Sir / Madam,

Sub: Project work of M.Sc., Nursing student in school in Tirunelveli.

I am to state that Miss. J. M. Silja one of our final year M.Sc., Nursing students have to conduct a project, which is to be a partial fulfillment of university requirement for the degree of Master of Science in Nursing.

The topic of research is "**A study to assess the effectiveness of groundnut chikki in improving the level of nutritional status among school children in a Selected hostel at Tirunelveli**"

Kindly permit her to do the research work in your rural area.

Thanking you.

Place: Manamadurai.
Date:

Yours faithfully,

Prof. Mrs. Shaberabanu
(PRINCIPAL)

APPENDIX-II

LETTER SEEKING EXPERTS' OPINION FOR CONTENT VALIDITY OF THE TOOL

From

Miss. J. M. Silja
M.Sc. Nursing, II Year,
Matha College of nursing, Manamadurai.

To

Through: The Principal, Matha College of Nursing, and Manamadurai.

Respected madam,

Sub: Requisition for getting expert opinion and suggestion for content validity of the tool.

I am a second year master degree student in Matha College of Nursing, Manamadurai in partial fulfillment of Master Degree in Nursing. I have selected the topic mentioned below for the research project to be submitted to the Dr. MGR Medical University, Chennai.

Problem statement:

"A study to assess the effectiveness of groundnut chikki in improving the level of nutritional status among school children in a Selected hostel at Tirunelveli"

I request you to kindly validate the tool and give your expert opinion for necessary modification and also I will be very grateful if you refine the problem statement and objectives.

ENCLOUSERS:

Statement of the Problem
Objectives
Hypothesis
Research Tool
Demographic profile
Observational Check List

Thanking you

Place: Manamadurai. Yours faithfully

Date:

Miss J.M.Silja

APPENDIX-III

CERTIFICATE FOR VALIDATION

This is to certify that the tool developed for data collection by **Miss. J.M.SILJA,** Final year student of Matha College of nursing, Manamadurai (affiliated to Dr. MGR medical university) is validated and can proceed with this tool and conduct the main dissertations entitled " **A study to assess the effectiveness of groundnut chikki in improving the level of nutritional status among school children in a Selected hostel at Tirunelveli**"

Date

Signature

APPENDIX-IV

LIST OF EXPERTS

1. **Dr. PRABAKAR NAVAMANI, MDDCH (PAEDIATRITION)**
   Chief consultant,
   Navamani children's specialty hospital, Madurai
2. **Prof. Mrs. NALINI., M.SC (N)**
   Principal
   Sacred Heart College of nursing, Madurai
3. **Prof. Mrs. ROSE RAJESH., M.SC (N). PhD**
   Vice principal
   C.S.I College of nursing, Madurai-10
4. **Prof. Mrs. JESSIE., M.SC (N)**
   Reader in Child Health nursing
   C.S.I College of nursing, Madurai-10
5. **Prof. Mrs. JASMIN SHEELA., M.SC (N)**
   Principal and H O D of Child Health nursing
   Mount Zion College of nursing, Pudukottai.
6. **Prof. Mrs. HELEN RAJAMANICKAM., M.SC (N)**
   H O D of community health nursing
   Matha College of nursing
7. **Prof. Mrs. SHABERA BANU., M.SC (N), (PhD)**
   Principal
   Matha College of nursing, Manamadurai
8. **Prof. Mrs. KALAIGURUSELVI., M.SC (N), (PhD)**
   Vice principal
   Matha College of nursing, Manamadurai
9. **Prof. Mrs. THAMARAI SELVI., M.SC (N), (PhD)**
   Additional vice principal
   Matha College of nursing, Manamadurai

APPENDIX-V

INFORMED CONSENT

I Miss J.M.SILJA II year M.Sc Nursing, in the Matha college of nursing, Manamadurai conducting a study ***"A study to assess the effectiveness of groundnut chikki in improving the level of nutritional status among school children in a Selected hostel at Tirunelveli."*** As a partial fulfillment of the requirement for the degree of M.Sc (Nursing) under the Tamilnadu Dr. M .G .R. Medical University. The study participants will be assessed by Weight checking,Hemoglobin estimation and clinical observational checklist. I assure you that the response given by you will be kept confidential .So, I request you to kindly cooperate with me and participate in this study.

Thanking you,

APPENDIX-VI

CERTIFICATE OF ENGLISH EDITING

TO WHOMSOEVER IT MAY CONCERN

This is to certify that the dissertation work **"A study to assess the effectiveness of groundnut chikki in improving the level of nutritional status among school children in Selected hostel at Tirunelveli."** Done by Miss. J. M. SILJA, II year M.Sc Nursing, in Matha College of nursing, Manamadurai is edited for the English language is appropriate.

Signature:

APPENDIX VII

TOOL

SECTION –A

Demographic Variables

1. Age

   a. 10-11years
   b. 11-12years

2. Religion of the child

   a. Hindu
   b. Christian

3. Education of the parents

   a. Illiterate
   b. Primary education
   c. Higher
   d. Graduate

4. Occupation of the parents

   a. Coolie
   b. Farmer
   c. Others

5. Income of the parents

   a. Below Rs.3000
   b. Rs.3001-5000
   c. Rs. 5001and above

6. Number of children

   a. One
   b. Two
   c. Three
   d. Four and above

7. Birth order

a. First child
b. Second child
c. Third child
d. Four and above

8. History of previous illness of children

a. Cumulative record.
b. Oral history

9. History of de-worming of children

a. Taken only once
b. Not at all taken

10. History of diet pattern of children

a. Vegetarian
b. Non-vegetarian

SECTION B

OBSERVATIONAL CHECKLIST TO ASSESS THE LEVEL OF NUTRITIONAL STATUS

S. No	Statement	Yes	Merely yes	Undecided	Merely No	No
1.	The child is looking interest and active					
2.	The child has good appetite and eating properly					
3.	The hair of the child appears look well groomed and Indian black, silky and healthy strong					
4.	The child's body build looks healthy an adequate					
5.	The Muscularity of the child appears firm, normotonic and healthy					
6.	The skin appears smooth slightly to touch elastic and firm					
7.	The eyes are clear and bright no spots in the cornea					
8.	The lips and gums appear smooth moist and pink colour					
9	Marked pitting edema in the dependent parts of the body					

10	Complaints of food intolerance and frequent diarrhea.					
11	Multiple punctuate pinkish areas over the legs presumably due to perifollicular hemorrhage					
12	Appearance angular stomatitis mouth ulcer and skin lesion					
13	Presence of Increased skin folds thickness more than normal					

Scoring

The observational checklist contains 13 statements to assess the level of nutritional status.

The item No 1 to 8 is the positive items it can be scored as

Yes - 4

Merely yes - 3

Undecided - 2

Merely No - 1

No – 0

The item no 9 to item no 13 the negative items It can be scored as

Yes – 0

Merely yes – 1

Undecided - 2

Merely No – 3

No – 4

The scoring is divided into 3 categories Minimum checklist score was 0 and the maximum checklist score was 62

Categories

Poor – 0-31

Moderate – 32-41

Good – 42- 62

APPENDIX VIII

தனி புள்ளி விபரம்

குழந்தையின் பெயர் :

1. வயது

    அ) 10 - 11 வருடம்

    ஆ) 11 - 12 வருடம்

2. மதம்

    அ) இந்து

    ஆ) கிறிஸ்தவர்

3. பெற்றோரின் கல்வி

    அ) படிக்காதவர்

    ஆ) தொடக்ககல்வி

    இ) மேல்நிலைக்கல்வி

    ஈ) பட்டதாரி

4. பெற்றோரின் தொழில்

    அ) கூலி

    ஆ) விவசாயி

    இ) மற்றவை

5. மாதவருமானம்

    அ) ரூ3,000க்கு கீழ்

    ஆ) ரூ.3001 - 5000

    இ) ரூ.5001 க்கு மேல்

6. குடும்பத்தில் உள்ள குழந்தைகளின் எண்ணிக்கை

    அ) 1

    ஆ) 2

    இ) 3

    ஈ) 4 அதற்கு மேல்

7. பிறப்பு வரிசை

    அ) முதல் குழந்தை

    ஆ) இரண்டாம் குழந்தை

    இ) மூன்றாம் குழந்தை

    ஈ) நான்கு அதற்கு மேல்

8. இதற்கு முன் உடல்நலம் பாதிக்கபட்டுள்ளதா?

    அ) திரள் பதிவேடு

    ஆ) ஆம் என்றால் என்ன நோய்

9. பூச்சி கடிக்கு மருந்து எடுத்துள்ளரா?

    அ) ஒரு முறை

    ஆ) இல்லை

10. உணவுமுறை

    அ) சைவம்

    ஆ) அசைவம்